

THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

JULY, 1949

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD



Rockline cableway operation of J. W.
Peters & Sons, Inc., Burlington, Wis.

30%-50% lower crushing cost



with Williams *"Super-Slugger"* Crusher

BECAUSE POWER SHOVEL LOADED STONE IS CRUSHED TO 1½ INCH OR ¾ INCH... IN ONE OPERATION!

Here's the extra heavy-duty hammermill that spells that welcome word *economy*. Built by Williams, the pioneer of the idea of crushing quarry stone to small sizes in one operation, the new Super-Slugger represents the latest improvements and the accumulated experience of many years in building heavy-duty hammermills. Savings result not only in initial investment... cost of foundations, conveyors, drives and buildings, but in faster operation and lower power consumption. If you require high tonnage output and a machine that can "take it" your investment in

the Super-Slugger will pay off in more "payload"... and more profit! Write for Bulletin 634 for detailed information of the newest Williams Super-Slugger.

WILLIAMS ALSO MAKES...

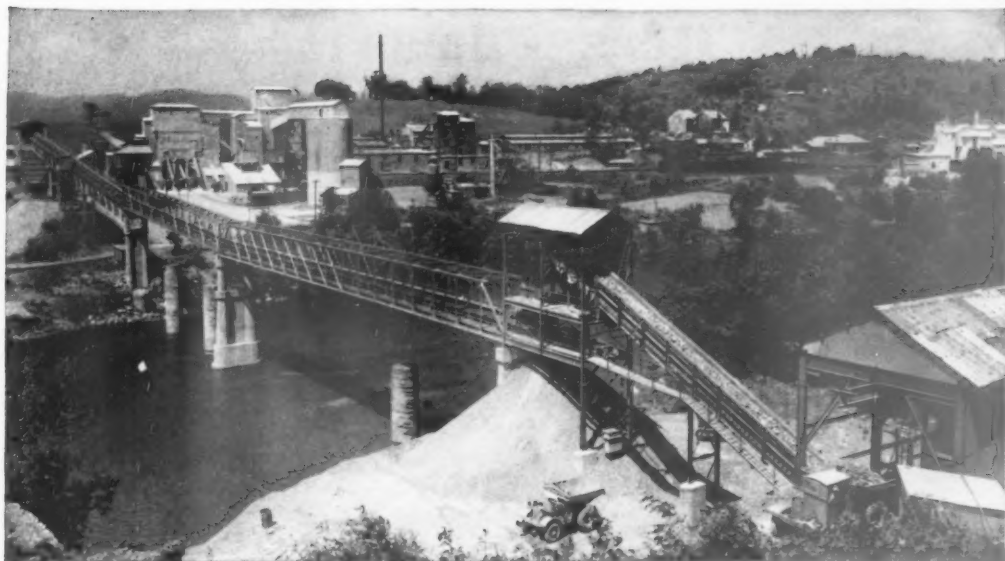
Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 ST. LOUIS AVE. ST. LOUIS 6, MO.

Williams

CRUSHERS • GRINDERS • SEPARATORS

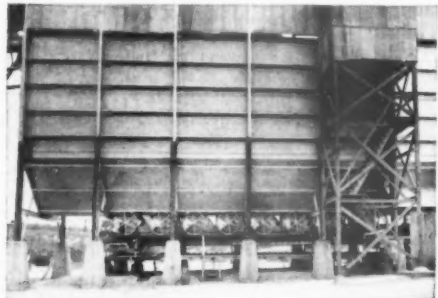




Link-Belt bridge conveyor system solves lime quarry problem



Above: Reversing shuttle belt conveyor, for distributing material throughout 70' length of bin; equipped with rubber-tread impact type idlers. Below: Side view of 1400-ton capacity stone storage bin of all-steel construction. Note large hand wheels on the stone discharge gates.



Another unusual handling problem solved by a Link-Belt integrated conveyor system is at Riverton Lime & Stone Co., Inc., Riverton, Va., where the stone is taken across a river.

From the crusher the stone is conveyed to the top of a Link-Belt "CA" vibrating screen by means of a 42" x 100' steel apron conveyor at an angle of 30°. The material from both screen decks is conveyed across the river by a 30", 674' centers roller-bearing belt conveyor. The fines from bottom deck of "CA" screen may either pass to belt conveyor or be discharged to ground as a bleed-off operation.

On the plant side of the river the belt conveyor discharges to 30" reversing shuttle belt conveyor serving a 1400 ton steel storage bin. Stone is discharged by eight Link-Belt bin gates and a 42" x 60' centers apron conveyor serving conveying facilities of the original plant.

Let us give you the complete story on this and other rock products handling and screening operations.

LINK-BELT COMPANY

11,531

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

LINK-BELT

CONVEYING MACHINERY
"THE COMPLETE LINE"



Bror Nordberg
Editor

Nathan C. Rockwood
Editorial Consultant

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Walter B. Lenhart, Associate Editor
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Victor J. Azbe
Dr. F. O. Anderog
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District Offices

Eastern Area—Richard Y. Fuller, Manager; John F. Lockitt, Assistant, 522 Fifth Ave., New York 18, Tel. Murray Hill 2-7888.

Central Area—R. P. Keine, Manager, Hanna Bldg., Cleveland 15, Tel. Main 4362.

Midwest Area—E. H. Hickey, Representative, 309 W. Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

Western Area—L. C. Thawn, Manager, 309 West Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

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London, England—Harold F. Charles, Managing Director, Maclean-Hunter, Ltd., Sun Life of Canada Bldg., Trafalgar Square, London, S.W.1.

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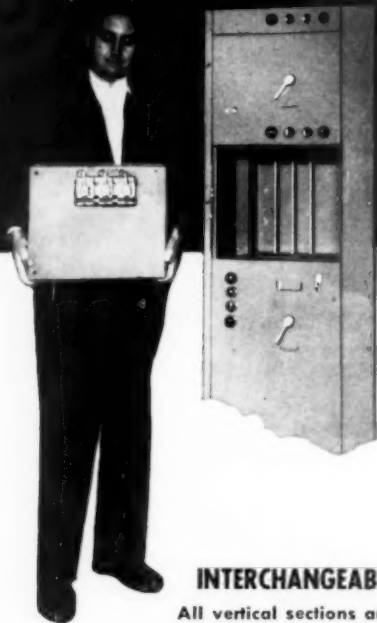
Twin grommet construction is a B. F. Goodrich "exclusive". Now made in D and E sizes only. To make sure you get genuine grommet V belts, see your local distributor. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

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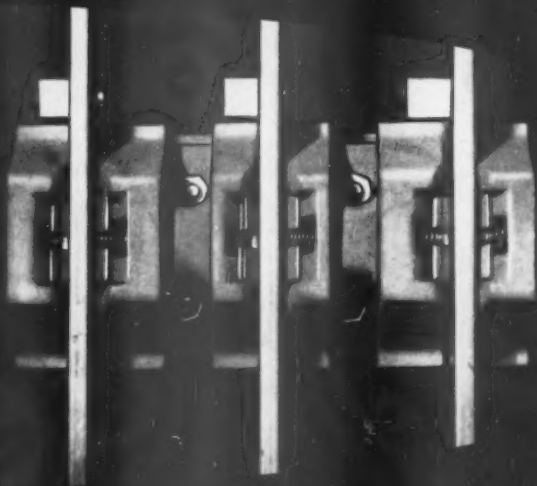
SAVES SPACE This compact centralized motor control system permits you to put all of your control in one spot—simplifies installation, interconnections, and maintenance. Control centers are only 12 inches deep, all wiring is front-connected so units may be placed back to back, in an "L" shape or flush against the wall.

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Payloaders are built in a complete line—four sizes from 1½ cu. yd. down to 10½ cu. ft. bucket capacity. Bulldozer Blade and Crane Hook attachments are also available as well as buckets for special uses. If you want to know how efficient and useful a wheeled tractor-shovel can be for your digging, loading, grading and material handling work, get the facts on Payloaders. They're backed by 28 years of experience in the design and manufacture of tractor-shovels. The Frank G. Hough Co., 705 Sunnyside Avenue, Libertyville, Illinois.

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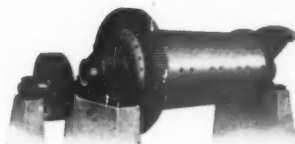
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Manufactured by THE FRANK G. HOUGH CO.

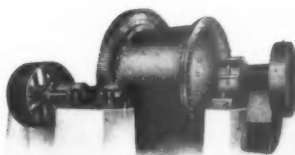




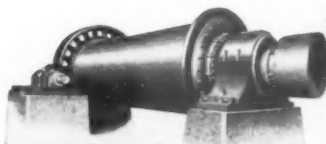
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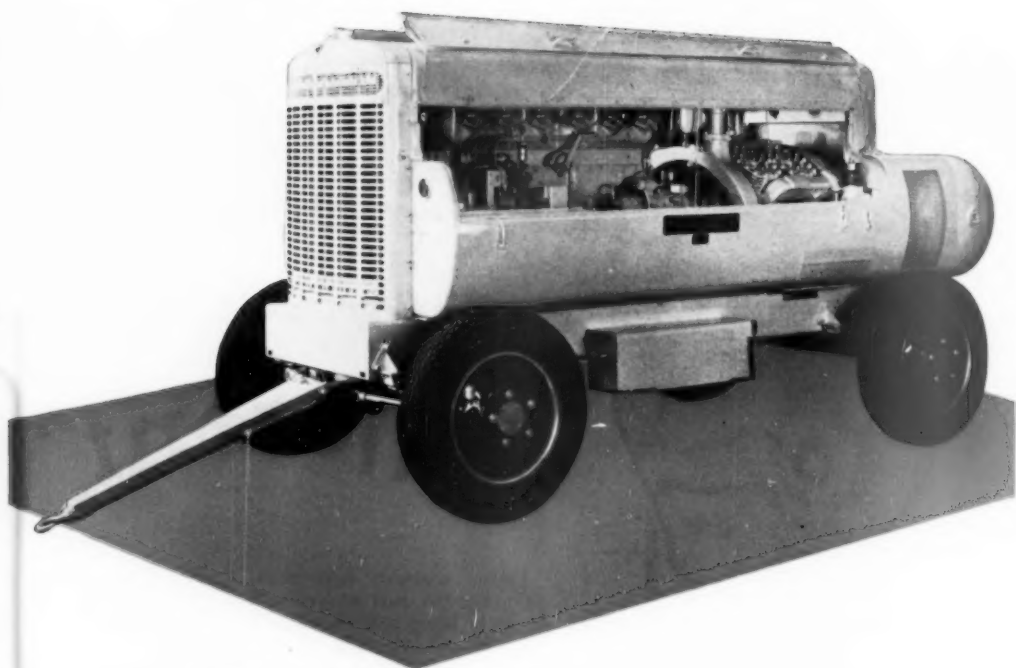
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Reduce air consumption at least 40%
Reduce drill maintenance as much as 30%
Save up to 30% on dynamite



HERE ARE A FEW TYPICAL REPORTS ON CARSET PERFORMANCE



ON A LARGE QUARRY JOB, drilling in hard trap rock with 45-lb. Jackhammers, steel bits dulled so quickly that they required 4 to 6 bits for a 2-ft. change — also the strain of forcing dulled bits caused excessive rod breakage. CARSET JACKBITS, now being used, are averaging 300 feet per bit. Rod life has been greatly increased and drill maintenance materially reduced.



ON A LARGE DAM PROJECT, 2" CARSET JACKBITS were used with 4" Wagon drills operating in hard dense basalt. These bits drilled 24-ft. holes in 22 minutes, while steel bits previously used required 66 minutes for an 18-ft. hole (with 10 bit changes). Footage was increased from 120 to 261 feet per shift. The contractor says "If I'd had CARSET JACKBITS at the beginning of the job, I'd have saved \$75,000 to \$100,000."



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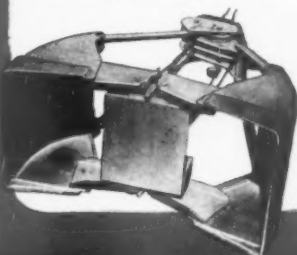
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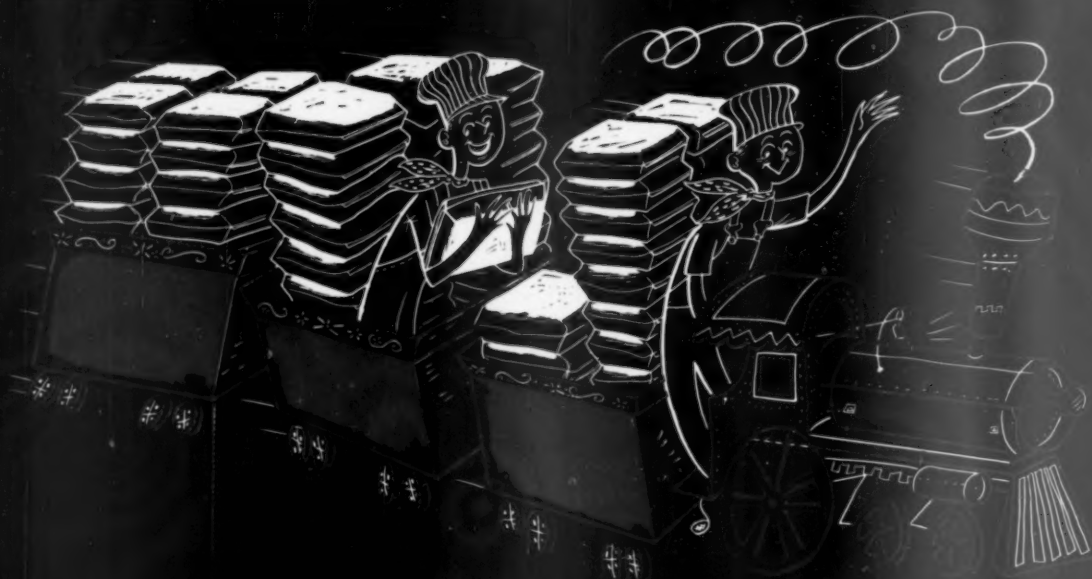
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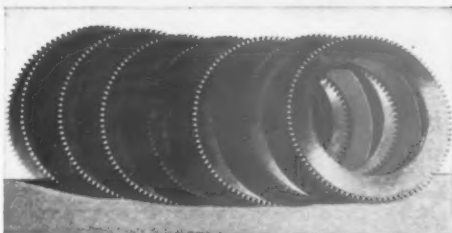
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The **(COE)** *Manufacturing Co.*
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Every third P&H Electric Shovel sold is a repeat order

LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENTS

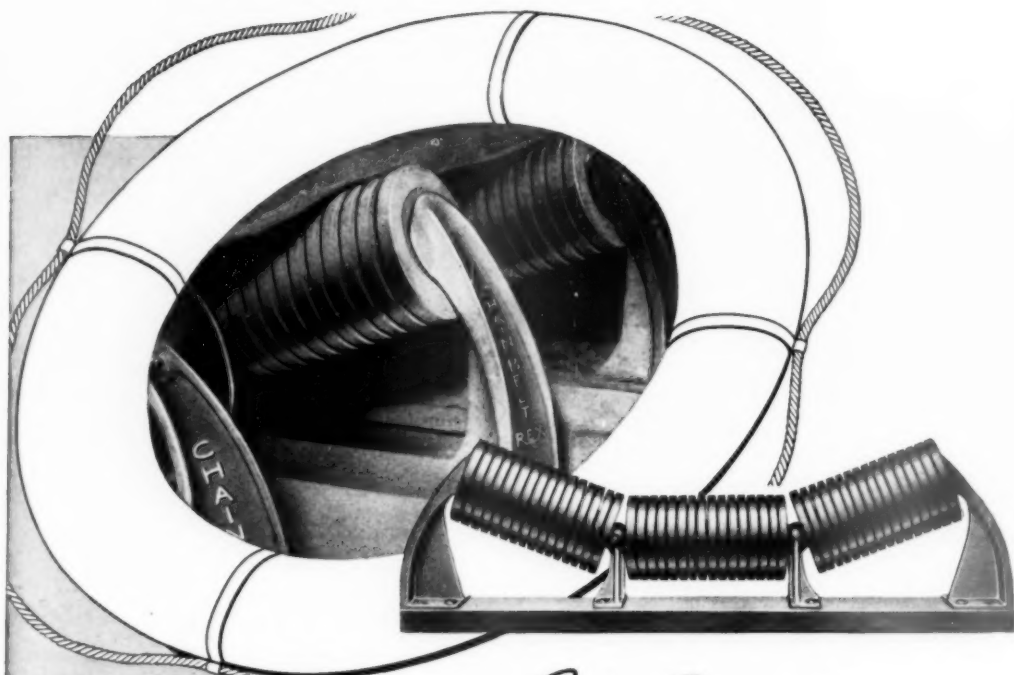
P&H

HARNISCHFEGER CORPORATION

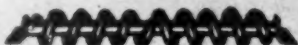
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A FEW OF THE
REX IDLER LINE



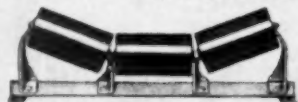
Rex No. 33 Rubber-Covered Spiral Return Idler . . . creates an ever-changing point of contact to keep moisture, ice, abrasive and sticky materials from building up on the belt.



Rex No. 33 Self-Aligning Troughing Idler . . . used at intervals to align belt where off-center loading, side-wind drifting and uneven stretch are problems.



Rex No. T-6 Flat Belt and No. T-1 Return Idlers . . . are dead shaft type idlers. They are equipped for high pressure grease lubrication . . . have hydraulic type fittings.



Rex No. 32 Troughing Idler . . . is roller-bearing equipped, can be furnished with steel or gray iron rolls. Has no shelves or pockets to catch dust . . . is self-cleaning.

A "Life Saver" FOR YOUR CONVEYOR BELTS!

Here's a real "life saver" for your conveyor belts! Rex Impact Cushioning Idlers installed under the loading points will take the "bumps" for your belt . . . minimize ruptures and lacerations!

Rex Impact Cushioning Idlers are dual-purpose rubber rolls. These rolls are scientifically molded with (1) deep primary grooves for maximum cushioning . . . and (2) secondary grooves to provide surface softness to protect belt covers from laceration.

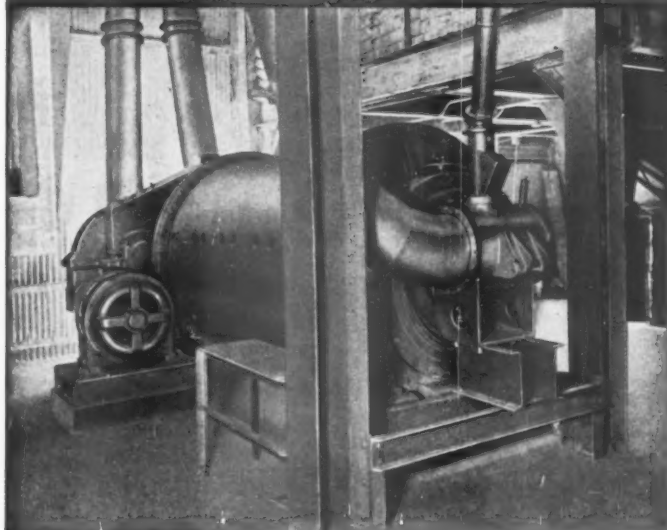
Here's deflection under impact! When otherwise damaging blows occur, there is momentary displacement of the rubber that absorbs the shock and cushions the impact force . . . and saves the life of your belt! There's plenty of support for Rex Impact Cushioning Idlers, too . . . heavy, unbreakable brackets on a steel channel base.

Rex Impact Cushioning Idler Rolls are pressed to the Rex Roller Bearing Assembly Tubes . . . the famous tube design that has been leading the field for over twenty-five years . . . with thousands of long-lived applications in almost every industry. For all the facts about these "life saving," belt saving idlers . . . write for Bulletin No. 463. Address Chain Belt Company, 1649 West Bruce Street, Milwaukee 4, Wisconsin.



KVS

AGRICULTURAL MACHINERY
AND
LIME MANUFACTURING

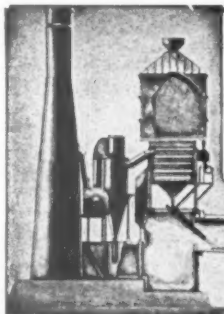


**THIS 5½' x 8' KENNEDY AIR SWEEP TUBE MILL PRODUCES 7 TONS
PER HOUR — With a feed of ¼ x ¾ in. limestone and dust**

Use the Kennedy Air Swept Tube Mill to get superfine grinding at bottom costs. The product ground in this tube mill and collected in three cyclones is (1) 5 tons per hr. of 80% thru 200 mesh, (2) 1 ton per hr. of 92% thru 200 mesh, and (3) 400 lbs. per hr. of 99.8% thru 325 mesh. Simple adjustment permits a desired variation from this combination of fine mesh sizes. The mill is driven through the remarkable Kennedy Integral Gear Drive for Tube Mills. This enables the motor to be direct-connected to the high speed shaft. The gears cannot be misaligned or set wrong. Power required to drive the mill is thus greatly reduced.

It is now possible to combine the superior product of a rotary kiln with the operating economy of a vertical kiln with the Kennedy Stone Preheater and Deheater. By partial calcining the material this system reduces kiln wear and kiln lengths. It recovers and utilizes exit gases, and has proved so efficient in actual operation that 40% fuel savings and increased output exceeding 20% have been obtained.

Short kilns employing the Kennedy method also acquire an internal glaze which lessens the wear on kiln liners, lowers the power requirements, and reduces formation of kiln rings. Overburned and underburned lime is practically eliminated. Cool feed and lime calcination are switch-board controlled.

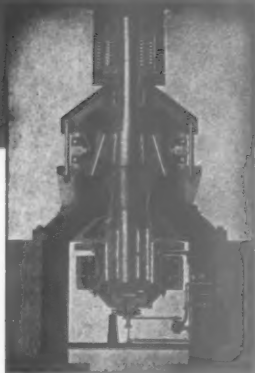


**The latest in scientific
lime production KENNEDY
STONE PREHEATER - ROTARY KILN
DEHEATER and SOAKING PIT**

20% Increase in Capacity — 40% Savings in Fuel



**KENNEDY ROLLER BEARING
GEARLESS CRUSHER**



With a Synchronous Motor built in its pulley, this machine shows 80% saving in the cost of maintenance and a saving of 50% in power over geared crushers. It has produced 156 tons per hour when set to 7/16" between the head and concaves at the bottom. The motor runs on roller bearings and is continuously lubricated by a force feed lubrication system. The motor is built especially for this crusher.

Kennedy-Van Saun Manufacturing and Engineering Corp.

2 Park Avenue, New York 16, N. Y.



ALL 36

Maclean-Hunter

publications
have

A COURSE TO STEER BY!

**THE FOUR CARDINAL POINTS OF
MACLEAN-HUNTER'S COMPASS ARE:**

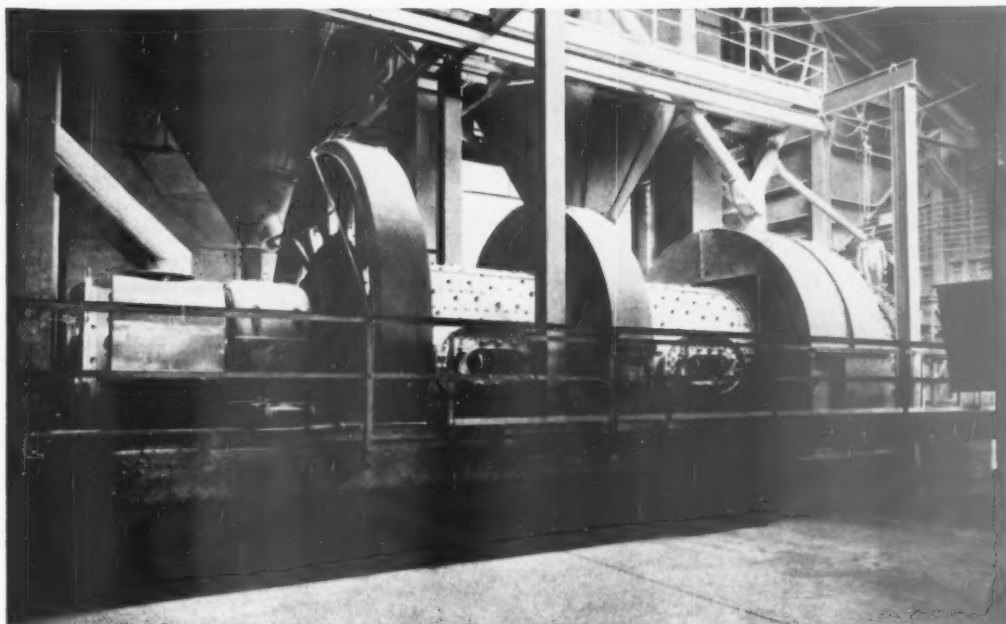
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Grinds 6,000,000 Tons in 19 Years: 16-20 Hours a Day

TAKES REAL TOUGHNESS to stand a long grind like this. Yet, after 19 years, this 9½ ft diameter, 3-compartment dry grinding *Compeb* mill is still going strong for a large cement company.

On the job 16 to 20 hours a day, this Allis-Chalmers mill reduces limestone and shale to a specification raw mix for a rotary cement kiln. Aside from routine liner and grinding media replacement, the mill has required only *one major repair*, a pinion and pinion shaft.

CHECK THESE STRENGTH FEATURES

Strength and stamina are built into every part of Allis-Chalmers *Compeb* mills.

- ▶ Bearings, for example, are extra large and equipped with flood lubrication . . . your assurance of low bearing pressure, long life.
- ▶ Mill shells are of all-welded construction, "stress-relieved" after welding to minimize strains.

▶ Mill heads are designed for maximum strength per pound of metal used.

CHOOSE FROM 5 MILL TYPES

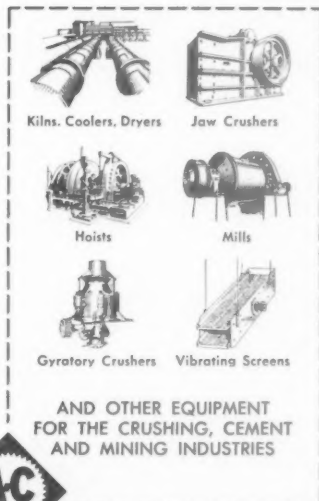
When you specify Allis-Chalmers for grinding mills you'll get a mill that's *well-suited to your specific grinding job*. A-C builds five separate types of grinding mills in a maximum range of sizes . . . with overflow, diaphragm grate or special discharge modifications . . . with feeder and drive to suit your mill size and application.

For sound advice on your grinding problems — based on A-C's experience in building over 4,000 mills — call your nearby A-C representative. Offices or distributors in principal cities in the U.S. and throughout the world.

Compeb is an Allis-Chalmers trademark.

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when hard-faced with

STOODY SELF-HARDENING 21

On a competitive test, crushing quartzite at high speed, this portable roll crusher operated 3 times longer when protected with Bare STOODY SELF-HARDENING 21 than with a more costly alloy. An additional bonus was obtained in freedom from spalling—even after repeated hard metal applications.

The new STOODY SELF-HARDENING 21 holds many advantages to users of heavy equipment:

*Exceptional abrasion resistance • Good impact strength •
Bare rods run as easily as coated with D.C. electric welders
• Can also be applied with A.C. • No slag •
Multiple passes • Bonds readily to manganese steel, cast
iron or common steels.*

For all-around weldability, STOODY SELF-HARDENING 21 can't be beat—its exceptional burn-off rate, wide amperage latitude and freedom from slag interference save you time, simplify hard-facing requirements. Try 50 lbs. on your next wear-proofing job. Call your Stody dealer for complete information and literature . . . or write to

STOODY COMPANY 11929 E. S. AUSTON AVE., WHITTIER, CALIF.





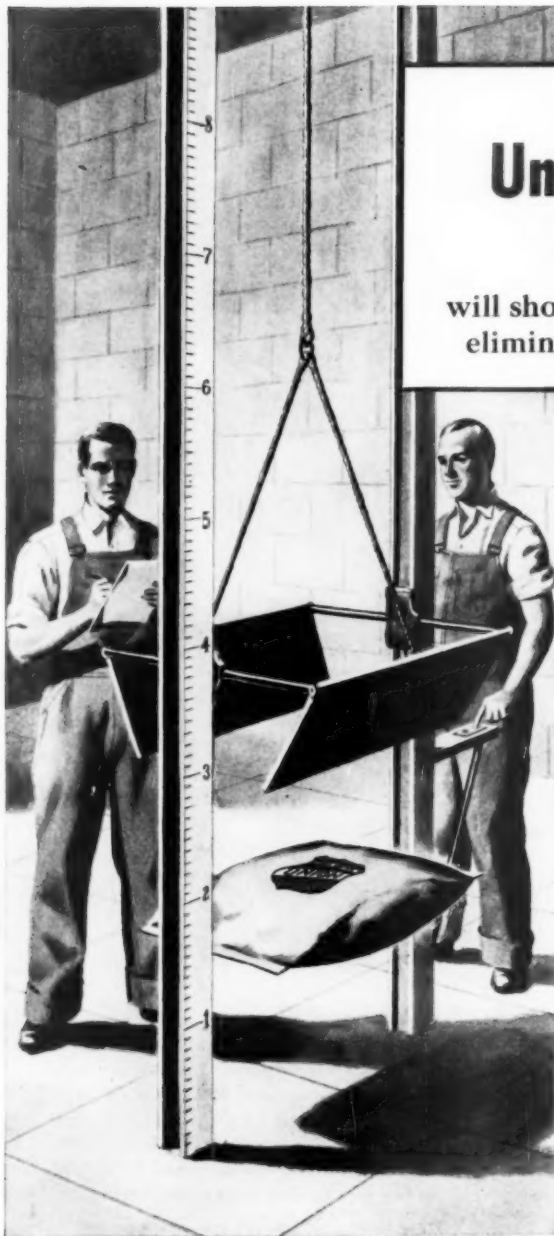
STUBBORN STONE

SHOT rock is no problem to this big TRAXCAVATOR working on the Cherry Creek Dam project in Colorado. Equipped with a Skeleton Rock Bucket which screens out loose dirt, the T7 TRAXCAVATOR has the rugged power and fast action to get out more of the right size rock in less time and at lower cost.

These versatile tractor excavators dig, load trucks, feed hoppers, maintain haulage roads, stockpile and do drawbar work. There's a correct size TRAXCAVATOR for every pit and quarry . . . with bucket capacities from $\frac{1}{2}$ to $2\frac{1}{2}$ cubic yards. On every operation — TRAXCAVATORS ARE PROFITMAKERS!

See your TRACKSON-Caterpillar dealer for full information, or write direct to TRACKSON COMPANY, Dept. RP79, Milwaukee 1, Wisconsin.

TRAXCAVATOR
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The Original Tractor Excavator



Your Union Multiwall Specialist

will show you how quality control
eliminates customer complaints!

SHIPPERS of more than 300 different products find Union Multiwall Bags reduce customer complaints and losses in shipping and handling. They are custom-designed with reserve strength for hard knocks.

Continuous testing in Union laboratories leaves nothing to chance. Bag paper is tortured and torn, burst and frayed. Loaded bags are dropped and tumbled and scuffed to discover any weak points, any need for strengthening.

Union Quality Control checks and rechecks every step in the making from timber to finished bag.

This constant checking and testing is a safeguard for every order of Union Multiwall Bags. So when your Union Multiwall representative calls on you, tell him the requirements of your product, its shipping and handling. You can be sure your delivered bags will live up to specifications.

Even if you are now using multiwall bags, your Union representative can give you new ideas on bag construction, packaging and handling that will save you money. So welcome him when he calls!



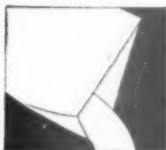
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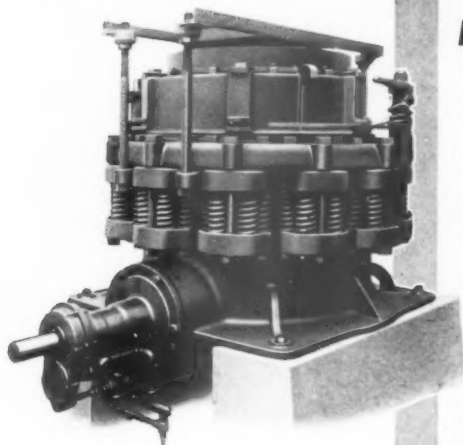
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2 more Symons Cones

for new American Materials Corp. plant



Two 4-ft. Symons Short Head Cone Crushers give this new slag processing plant a capacity of 200 to 300 tons per hour depending upon size gradations.

Producing fines for glass manufacture and soil conditioning material is the job assigned to two 4-ft. Short Head Symons Cone Crushers in this new, modern slag processing plant at New Miami, Ohio. 39 other Symons Cones have been installed in plants owned by the parent company, American Aggregates Corp. and its subsidiaries since 1926. Whether your problem is making fine products from stone, gravel or slag, there is a Symons Cone best adapted for your needs. They are built in Standard, Short Head and Intermediate types with capacities from 6 to 900 tons per hour.

In addition, Nordberg also builds Primary Gyratory and Jaw Crushers, Vibrating Screens, Grinding Mills, Grizzlies, Feeders, Kilns, Coolers, Dryers and a complete line of Diesel Engines for all power applications.

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*Machinery for processing
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**DRYING and
GRINDING
in ONE MILL**



Wherever a drying and or grinding operation is necessary in your production line . . . as in the preparation of commercial clays . . . you can obtain superior results by using Raymond equipment.

The Raymond IMP MILL is a specialized unit for this purpose. When equipped with Flash Drying, it combines the drying, grinding and separating operations in a single, continuous, automatic and dustless process.

Raymond units of specialized design are available to handle clays of various types and high or low moisture content, producing a uniformly pulverized and classified dry, finished material. Let us work with you on a set-up to do your processing job cheaper and better.

Write for details.

FLOW SHEET of Imp

Mill with Flash


Drying Equipment.

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RAYMOND PULVERIZER DIVISION

1307 North Branch Street, Chicago 22, Illinois

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THE BEMIS MAN
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... TO GIVE YOU THE BEST
IN MULTIWALL SERVICE

When you can't estimate your future Multiwall needs right on the button, it's handy to have a supplier near for prompt service.

With the facilities of seven Bemis Multiwall plants available through thirty-six sales offices across the country, you are in a much better position to keep your multiwall supply in line with your needs.



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On the Ball

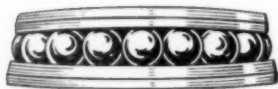


KILN FIRING AT KIMBALLTON

with

B&W

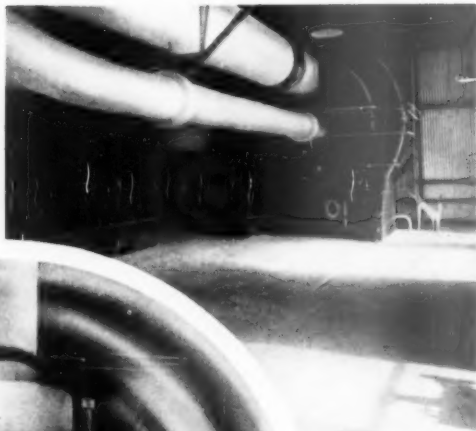
Pulverizers



One of America's largest lime plants is that of National Gypsum Co. at Kimballton, Va. It is a fine example of sound engineering and design.

Two 300-ft kilns are direct-fired by B&W Type E Pulverizers—which employ the efficient ball-bearing method of grinding.

B&W's 24-year experience in the design, construction and installation of direct-firing pulverizers is at the service of cement and lime-kiln operators all over the country. Call in the nearest B&W representative for an analysis of your requirements when planning modernization of existing facilities or a new plant program.



One of two B&W Type E-35 Direct-Firing Mills at Kimballton, and (above) hood of one of National Gypsum's two 8' and 10' x 300' rotary kilns.



**BABCOCK
& WILCOX**

THE BABCOCK & WILCOX COMPANY, 85 Liberty Street, New York 6, N. Y.

C-84



HAISS BUCKET LOADERS

Pay Their Way!!!

Load 3 To 8 Yards Per Minute

HAISS Bucket Loaders for years have been excavating, rehandling, stripping and loading sand, gravel, stone, topsoil, coal and similar materials. Recent improvements in design have increased their value to operators many fold. Write for catalog today.

YOU Can Get Prompt Delivery from stock on Haiss loaders today. Models 75, 77, 80 and 135 wheel or crawler mounted — capacities from 3 yds. to 8 yds. per minute. Accessory attachments including swivel belt conveyor, swivel chutes, shaker screens, grizzlies, etc., available.



HAISS BUCKET LOADER with swivel belt conveyor provides greater reach and greater discharge height. Range of discharge is within arc of 180° as conveyor swivels around head of boom.

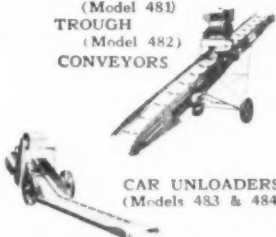
HAISS CONVEYORS and BUCKETS Pay Their Way, Too!!



SECTIONAL CONVEYOR (Model 487)

Haiss Heavy Duty Sectional Conveyors made in easily assembled standardized sections for portable or stationary installation. Standard widths 18", 24", 30", 36". Lengths to suit requirements. For handling all loose or packaged materials. Ask for Bulletin No. 487.

**FLAT BELT
(Model 481)
TROUGH
(Model 482)
CONVEYORS**



**CAR UNLOADERS
(Models 483 & 484)**



EXCAVATOR REHANDLER

Heavy Duty or Light Duty Buckets for high speed excavating or rehandling of all types of material. Quick opening. Quick discharge. All sizes.

Experienced Haiss representatives are located in all principal cities. For further information, write, phone or wire.

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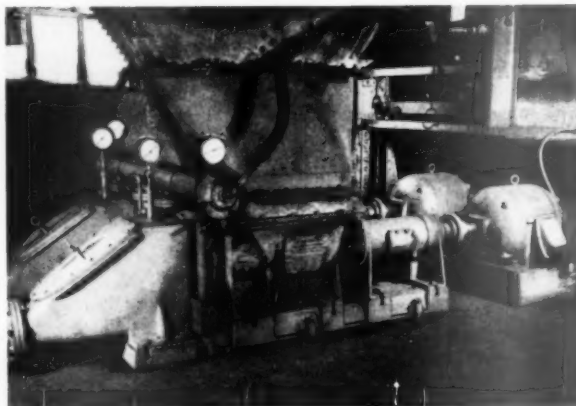




SYSTEMS *for* PULVERIZED FUELS

TYPICAL MATERIALS CONVEYED BY FULLER-KINYON SYSTEMS

Asphalt filler dust
Barytes
Bauxite
Catalyst
Cement (Portland)
Cement raw materials
Chalk
Clay (dried)
Coal (pulverized)
Coke dust
Dolomite (pulverized)
Feldspar
Flue Dust
Fly ash
Fuller's earth
Gypsum (calcined)
Gypsum (raw)
Lime (quick)
Limestone (pulverized)
Magnesite
Manganese dioxide
Ores (pulverized)
Phosphate rock (pulverized)
Rock Dust
Soda ash
Starch



Two Fuller-Kinyon Stationary Pumps installed in the plant of Calumet and Hecla Consolidated Copper Company, Lake Linden, Michigan, for conveying pulverized coal.

The Fuller-Kinyon Conveying System has been used for many years for conveying pulverized coal for the firing of rotary kilns and dryers in the cement industry, boilers in industrial plants, and large central power-generating stations. Also for metallurgical furnaces for gasification and by-product recovery; nodulizing, pelletizing and briquetting in metallurgical processes in which an ore is mixed with the fuel.

These systems have replaced many worn out or obsolete mechanical systems, with their fire and explosion hazards. The Fuller-Kinyon System is absolutely safe from such hazards, due to the fact that the quantity of air required for aeration of the material being conveyed is less than one percent of that necessary for combustion. The system is efficient, clean, and low in power consumption. The conveying pipe lines can be carried overhead, hung on simple hangers, or buried underground. Will convey horizontally, vertically, or uphill. Present systems convey materials as far as 3600 feet; elevations to 300 feet.

If you have a pulverized fuel conveying problem, or other dry pulverized materials to be handled, our engineers will be glad to make a study of your layout and make recommendations for the economical handling of such materials. It will cost you nothing; no obligation on your part.

FULLER COMPANY, CATASAUQUA, PA.

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FULLER-KINYON, FULLER-FLUXO, AIRVEYOR, F-H AIRSLIDE CONVEYING
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MATERIAL COOLER . . . MATERIAL-LEVEL INDICATOR . . . AERATION
UNITS . . . AIRLIFT . . . CONSTANT-HEAD FEEDER . . . SLURRY VALVES
MOTION SAFETY SWITCH . . . SAMPLERS

P-105



Roadside Report
FORD *Bonus Built* TRUCKS ★ **M. W. LOGAN**
 Miami, Florida

Ford Model F-7 BIG JOB shown, has Gross Vehicle Weight rating of 19,000 lbs.; Gross Combination Weight rating of 35,000 lbs. as a tractor.

"My 145-h.p. FORD F-7 Makes Two Extra Loads Per Day!"

"HAULING wet sand and pit rock, I find that my 145-horsepower Ford F-7 Big Job can get in two extra loads a day over trucks of other makes," writes Murray W. Logan of Miami, Florida. "We're getting 50 to 55 miles an hour in high gear—and exceptional pulling power in low speeds. Gas mileage comes to 7 miles per gallon, and maintenance costs have been nominal. In my opinion, no 2½ ton truck of any other manufacturer compares with the Ford F-7!"

Dump-truck operators like Mr. Logan are going all-out in their praises for the new 145-h.p. Ford Big Jobs. For one thing . . . the new Ford 337 cu. in. engine outperforms anything in its class. For another . . . there's the luxurious comfort of the new Ford Million Dollar Cab—mighty important in work on rough roads or off-the-road construction. And Ford Big Jobs are Bonus Built—a feature of every one of over 150 Ford Truck models. Bonus Built is the superstrong construction that contributes to long truck life. Life insurance experts prove Ford Trucks last longer.



BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS,
 LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford exclusive concentric dual-throat carburetor for more power, more economy.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2¼-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ Ford Super Quadrox single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

FOR COOLING HOT CEMENT



Cement manufacturers are frequently confronted with the problem of cooling hot cement to temperatures acceptable when making bulk shipments or for immediate packing in paper bags. The FLS Cement Cooler was especially developed for cooling hot cement. * The FLS Cooler consists of a tank, water-cooled externally, the cement being introduced into the bottom and conveyed in a thin layer along the inside of the water-cooled wall to the top, where it is discharged. Thus an intimate contact is established between the cement and the water-cooled surface, assuring high-cooling efficiency. * In addition to cement, the Cooler is applicable to many other similar dry pulverized materials.

F. L. SMITH & CO.

Designers of Cement Making Factories, Manufacturers
of Machinery for Making Cement and Lime, etc.

11 WEST 42nd STREET

NEW YORK, N. Y.

"WE HEAR..."

July, 1949

Outlook for machinery production is a further drop in all types of equipment with large cutbacks in most types of industrial machinery. Production already has taken a substantial drop, U. S. News & World Report states. Output by the fourth quarter of 1949 is expected to fall to 200 percent of the 1935-39 average.

Construction work in May was valued at \$1,568,000,000, the Commerce Department reports. This represented a seasonal gain of nearly \$200,000,000 over April, but was below the \$1,572,000,000 volume of May, 1948. Public construction played an important role in the May figures, totaling \$457,000,000, 19 percent above the previous month and 31 percent above May, 1948. Private building in May amounted to \$1,111,000,000, 13 percent higher than in April, but down 9 percent from a year ago. In the first five months of 1949, construction work totaled 3 percent more than in the like period of 1948.

Steel production dropped to a further new low for the year the first week in June, American Iron & Steel Institute reported. Operators for the industry as a whole are scheduled at 89.1 percent of capacity, as compared with a 96.1 capacity a year ago.

Income from tolls during 1948 on the Pennsylvania Turnpike amounted to \$5,600,000, Gov. James H. Duff has announced.

The proposed Lake Erie-to-Ohio River belt conveyor system, although voted down by Ohio State Legislature, will be proposed again when another state legislature convenes in two years. In the interim, detailed engineering for the project will be completed, H. B. Stewart, Jr., president, of the Riverlake Belt Conveyor Lines, Inc., said.

Employees in limestone and rock quarries will come under a new bill to establish a minimum wage of 50¢ per hr. for Missourians state legislature has decided. Basically, the minimum wage is to apply to all but agricultural workers.

Labor unions in the Cleveland area recently suggested that in new contracts with manufacturers, employees should be allowed additional paid holidays, including Franklin D. Roosevelt's birthday, Washington's and Lincoln's birthdays, election day and Good Friday, the associated industries of Cleveland has reported. Generally, Cleveland companies grant their employees six holidays per year.

Equipment has been developed for production of soil pipe in sand-lined molds at the rate of 250 per hr. per machine, Iron Age reports.

With luck, the business curve should not go down very far, nor should the current so-called recession last very long, according to Business Week, which states, "We could quite possibly be on the way up again before the year is out."

WE HEAR

Thieves made a big haul recently when they "lifted" an obsolete 15-ton rock crusher from the city of San Jose, Calif. Neighbors reported that a crew of men moved in with acetylene torches several weeks before the theft was discovered and cut the crusher in half. Then they arrived with trucks and a crane to complete the job of removal.

There are now more than 233,000 apprentices in training for the construction trades, Department of Labor reports, with California and New York ranking highest, in that order, in number of apprentices employed.

Amount of materials required for modern highway construction can be estimated from figures summarized by the Public Roads Administration for federal-aid highway jobs completed during the third quarter of 1948. A total of 2,053,000 bbl. of cement was used, at an average unit-cost to contractors of \$2.74 per bbl. Aggregates purchased totaled 3,989,000 cu. yd., at \$2.21 per cu. yd.; and an additional 5,636,000 cu. yd. of aggregate was produced. Ready-mixed concrete totaled 100,600 cu. yd., at \$9.53 per cu. yd.

Next to new orders, inventories are top question in manufacturing operations, and there is haste to reduce banks of parts and raw materials. A prominent Detroit manufacturer who recently completed an extensive investigation of the subject has estimated that a reduction of 10 percent in the value of his inventory will completely eliminate all profit on operations.

Two Iowans searching for a new gravel bed came across some unusual rock which they believe contains gold. Reports on test samples are that the rock is "valuable."

Engineers of the Ohio Department of Highways are watching with interest a plan of the Virginia and Texas highway departments to lay stretches of rubberized highways. British and Dutch rubber interests are pushing the experimental plan in this country.

Socony-Vacuum Oil Co., Inc., recently obtained a patent covering the use of lime in producing drying oils for varnishes and paints from petroleum refining wastes, Limeographs reports. In the Houdry and Thermofof catalytic cracking operations the "bottoms," a tar-like residue, is hydrogenated and then chlorinated. This material is then dehydrochlorinated with quicklime at 105-110 deg. C. The resulting oil is then blended with the conventional resins and oils for the preparation of protective coatings.

A 1950 election platform calling for public ownership of five more major industries, including the cement industry, has been disclosed by Great Britain's Labor party.

Scientists at Armour Research Foundation, Illinois Institute of Technology, hope to solve the problem of finding a suitable heat-resistant material for rocket liners and jet engine parts through the use of lime. They plan to stabilize lime against attack by moisture and against excessive thermal shock, something which no one has been able to do as yet.

Some improvement in the supply of cement for U. S. users may be seen in the exports of cement-making machinery. Allis-Chalmers reports a small boom in exports to Europe and North Africa which could mean that foreign countries will be able to take care of their own requirements soon, thus reducing their need for U. S.-manufactured cement.

THE EDITORS

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★ ★ ★ Editor's Page

Modern Road Construction Demands More Aggregates Per Mile

WHILE SOME downward trend in the cost of highway construction is to be expected, following the pattern of the 1920's subsequent to the inflationary period after World War I, the drop in costs from record highs will not be nearly as much as some would hope for or expect.

Reductions in costs of labor and materials that go into the building of highways, even if they are substantial, will not be enough to satisfy those who do not recognize or refuse to acknowledge that roads, to be efficient and safe, must be built entirely different from those constructed twenty years ago.

Improvements in highway design to meet the demands of heavy traffic are largely responsible for construction costs four times as great as they were twenty years ago in Illinois, according to a recent statement by Chief State Highway Engineer C. M. Hathaway.

Comparative Demands

A ten mile section of U. S. highway in Illinois that was built in 1924 at a cost of \$24,000 a mile required the expenditure of \$124,000 a mile for reconstruction in 1946-1947. Most of the wide difference in cost was due to the use of thicker concrete, wider shoulders, steel reinforcement and better subbase in order that the new road not break down under the pounding of heavy traffic in less than twenty years like the stretch it replaced and so that driving may be safer.

Our road example here originally was of 6-in. unreinforced concrete, 18 ft. wide, and the total absence of granular subbase very likely was the chief cause of its early failure. As rebuilt, the road is of 10-in. reinforced concrete, 24 ft. wide, and rests on a 6-in. subbase of prepared gravel.

That kind of paved roadway, with a thickness of sixteen inches as compared to six inches, can in no way be compared in cost with earlier highways except on its performance and durability as measured by years of serviceability.

We believe that the heavy investment for greater permanence will prove to be sound and economical for those who foot the bill, in yearly cost per mile for the construction and in reduced maintenance. Maintenance cost alone, for roads that cannot stand the gaff of today's traffic, has grown to proportions that have throttled any real attempts to build new roads in many areas.

Granular subbases are gradually but definitely finding more acceptance as the various State highway departments learn by research and experience that a six inch layer, or more, of gravel,

stone or other suitable aggregate prevents pumping up of many kinds of subsoils when roads are subjected to heavy wheel-loads.

Performance the Criterion

Performance, as so observed, is a powerful argument in favor of more highway funds for the use of engineers who have the public interest at heart and who have come to realize that the older roads would have stood up much better than they did had they been placed on proper subgrades. And, it is plain that the placement of millions of tons of granular subbase material is the real solution to durability as long as the nation's highway system must accommodate the rubber-tired "box cars" that pound away at the roads at high speeds day after day with their heavy loads.

In traveling our main inter-city highways at night, as we frequently do, it seems to us that trailer-trucks keep getting bigger and bigger all the time, making it more apparent that we need greater support for heavy loads, adequate drainage for protection of pavement and, for safety's sake, the roads must be wider. Even on main paved highways, the traveling motorist must eat plenty of dust thrown up from the shoulders of the right-of-way by trucks that can go as fast as he can.

The amount of money being spent for highway construction is no criterion of progress being made toward meeting road requirements. The year 1948 was a record-breaker in dollar volume of expenditures for highway construction, but what did we get in terms of miles of roads built? We got next to the lowest number of miles built for any single year since back in the 1920's. The low purchasing value of the dollar was contributory but so was the need for building good, safe highways that will endure.

Roads are continuing to be built at prewar rates and yet ten million more vehicles have come on the highways since the war. It will be interesting to see the outcome of attempts in the various states to secure greater funds through taxation for road construction. Producers of aggregates and cement certainly have a vital stake in the issue and, gosh knows, John Q. Public is the guy who ultimately will gain or lose.

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Rocky's NOTES

Nathan C. Rockwood

Rock Products Producers' Interest in ERP

WE HAVE BEFORE US two reports on the progress of the European Recovery Program—one published in Paris, France, by the Organization for European Economic Co-operation, and the other is the Third Report to Congress of the Economic Cooperation Administration. We assume that the report printed in France, representing the views of official representatives of the European governments, which are cooperating under the American, so-called Marshall Plan, are their own, and influenced by American opinion or pressure only to the extent that these naturally express a desire for continuing grants of American money and credits. At least their report has more candid comments on recovery progress to date.

All of us are, or should be, vitally interested in the European Recovery Program: First, as intelligent beings on a planet which scientists tell us will be over-populated in a few short generations; second, as citizens and taxpayers of a nation which has taken upon itself the burden and responsibility of promoting peace, prosperity and contentment for the growing population of a large part of the world; third, as individuals with naturally selfish instincts, who are concerned about how all this will affect our own industry, business, professional or family welfare.

National Unselfishness

From one angle, and the one that probably entitles the Program to practically universal respect and support, it is an unprecedented act of national unselfishness in a world very largely inhabited by selfish people. As such it is a godly act, no less. It is more so than most busy Americans really appreciate, because we do not know the half of it, being too much concerned with our own (selfish) affairs. Very few will ever take the time and trouble to look over the two reports mentioned.

When we stop to recall that most of the wars in modern history had their origins in economic or commercial rivalry, we are better able to appreciate the significance of the E R P. For its design is no less than to persu-

ade or force the nations of Western Europe to forget and forego their individual economic and commercial advantages in world industry and business, and to unite to help each other; and also on our part, to help them build up and modernize their industries so that they will be better able to compete and to supplant our own products in the world's markets. Other nations have fought bloody wars to prevent their competitors from doing this very thing.

Being human, we cannot help believing that the fully developed Program will require more magnanimity than most Europeans or ourselves possess at this time. Nevertheless, to achieve so laudable an objective no trial or effort should ever be neglected.

Carrying Water on Both Shoulders

The report of the Economic Cooperation Administration states that the Program has been so conducted "as to minimize the drain upon the resources of the United States." Yet two paragraphs below it is stated: "The movement of ECA financed commodities has had definitely favorable effects on our foreign trade. It has helped to retard the continuing decline in exports to Western Europe * * * " "The E R P has also supported the operation of the United States merchant marine." The operation of the U. S. merchant marine costs about three times as much as the costs of operation of the merchant marine of some of the countries our taxpayer's money is being used to help. The U. S. merchant marine has direct government subsidies in addition to getting higher freight rates. But political pressure requires at least half the E R P tonnage be carried in American ships. And that is only one example of the many special interest groups in this country which profit under the Program.

The whole picture resembles children "playing store." Their elders, or supervisors, give them a bunch of coupons to use as money, and the kids proceed to exchange them for "store goods." When playtime is over the coupons are all returned, but the

"store goods" probably have been consumed. The kids have been kept busy and out of mischief. Obviously, there will be no permanent benefit from the E R P unless the nations of Europe are permitted to earn their exchange money by exporting to the United States. The report of the Organization for European Economic Cooperation states specifically that all of their national economic recovery programs are based on that assumption.

We hear frequent complaints that the United States does not receive adequate recognition (gratitude is really meant) for the assistance it is giving the countries of the world. Our government is subsidizing radio, moving pictures, certain periodicals and newspapers to assure that its efforts will be recognized abroad. It would be just as appropriate to make sure that American citizens understand the parts that they must play. They won't learn that from the propaganda now fed them.

To bring the subject nearer home, the Organization for European Economic Cooperation states: "The cement industry has nearly reached its pre-war level of production and is planning to attain 130 percent of this output in 1952; and this would enable it to export approximately 6 million tons [over 30,000,000 bbl.]." That's fine, and we congratulate our European friends (and ROCK PRODUCTS subscribers) on their achievement. But, are American cement manufacturers prepared to welcome imports of portland cement, which only a few years ago were so strenuously objected to? It probably makes little difference to the E R P administration whether they are or not. However, even though the manufacturers of cement are too few to be politically potent, they do employ a sizable group of union labor, which does make its weight felt politically. Are these workers prepared to accept reduced wages in order that their employers may meet the production costs of their European competitors? If they really understand and are in entire sympathy with their government's policy, they are. We suspect, however, that they won't be that magnanimous.

The same holds true for any other American industry we might take as an example, although it so happens that portland cement is about the only one in our field which enters international trade to any extent. The point is that neither our manufacturers nor their employees are being made aware of all that E R P implies in unselfish adherence to a principle, best described in biblical terms of "cast thy bread upon the waters and thou shall find it after many days." It is less than honest to represent E R P as benefiting present American business, by stimulating demand for exhaustible natural resources, or by providing cargoes for high-cost, subsidized American shipping. It merely is postponing a more critical situation.



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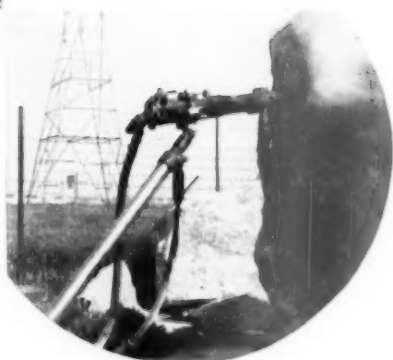
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LABOR RELATIONS TRENDS

N.L.R.B. Dismisses Truck Drivers' Union's Petition to Organize Contract Haulers of Sand and Gravel — Upholds Limestone Producers' Method of Getting Rid of Trouble-Maker, Even Though Union President

By NATHAN C. ROCKWOOD

TWO RECENT DECISIONS of the National Labor Relations Board are of general interest, although they involved issues on entirely unrelated subjects. The first was Case No. 35-R.C.-183, May 10, 1949, in which Local No. 716 of the International Brotherhood of Teamsters, Chauffeurs, etc., petitioned the Board to authorize it to include as a bargaining unit a group of independent contractor truckers serving the Builders Sand and Gravel Co., Indianapolis, Ind. In the second case the Board made what it termed a close decision regarding the "resignation" of an employee of the Eldorado Limestone Co., Shingle Springs, Calif., upholding the employer's contention that the employee was not "fired" because of union activity (he was the president of his local in the United Cement, Lime and Gypsum Workers' International Union)—Case 20-CA-69, May 23, 1949.

In the Builders Sand and Gravel Co. case, the employer contended that this was a separate producing unit of a building supply business, and as such was not engaged in business affecting interstate commerce within the jurisdiction of N.L.R.B. The Board decided that the sand and gravel subsidiary could not be separated from the parent company—Spickelmier Co., which deals in general building supplies—and that the operations as a whole affected interstate commerce to an extent which justified its jurisdiction. The Board found that since annual out-of-state purchases of the building supply organization total about \$200,000 and represent approximately 35 percent of the company's total purchases, and the operations have a close relationship to the building construction industry, its jurisdiction was justified by the law.

Defines Independent Haulers

The employer was more successful in maintaining that all his truck drivers serving the sand and gravel plant are independent contractors, are not employees within the meaning of the National Labor Relations Act, and therefore could not constitute an appropriate collective bargaining unit. Probably similar cases have come up elsewhere or will come up, for the Teamsters' Union is in the midst of a country-wide campaign to organize everyone who drives a truck, whether it is his own or not. Therefore, the text of the relevant parts of the N.L.R.B. decision should prove helpful

to other producers who have their hauling done by contract.

The Board ruled: "The standards to be applied in determining who is an independent contractor, within the meaning of Section 2(3) of the Act were comprehensively discussed in our decision in the Steinberg case (Matter of Morris and Julian Leslie Steinberg d/b/a Steinberg and Co. 78 N.L.R.B. 211). As noted there, the legislative history of Section 2(3) makes clear that Congress intended to give to the terms 'employee' and 'independent contractor' their conventional meanings, and that the Board in determining coverage under the Act, should follow the ordinary tests of the law of agency. We further pointed out, the general test thus contemplated is the familiar 'right of control' test, under which an employer-employee relationship is found to exist where the person for whom the services are performed reserves the right to control the manner and means by which the result is accomplished, but does not exist where the right to control is merely limited to the result accomplished.

"Applying these standards to the facts disclosed by this record, we are persuaded that the drivers involved herein are independent contractors. Although some elements of the relationship between the drivers and the employer suggest that they are employees, an over-all view, in our opinion, compels a contrary finding.

"In particular we note that: (1) each driver owns his own truck and pays for all its gasoline, repairs and insurance; (2) the sole compensation of a driver for hauling for the employer is 5 cents a ton-mile for loads hauled, and accordingly, his net earnings represent the difference between such compensation and his expenses in operating his truck; (3) some of the drivers have their names and telephone numbers on their trucks, and some are listed in the telephone directory as being in the trucking business; (4) most of the drivers also do hauling for other firms, and this is done while the sand and gravel pit is in operation as well as on week ends; (5) some of the drivers frequently purchase sand and gravel from the employer and sell it on their own; (6) there is no requirement that drivers be on hand at any specified hours daily or any specified days weekly, and they are free to, and do, report late, leave early, and fail to report at all, without being disciplined for doing

so; (7) the drivers are not directed as to the route to be taken in making a delivery; (8) the employer does not deduct social security or withholding taxes from the drivers' pay, or carry workmen's compensation insurance for them; (9) unlike the regular employees at the pit and the drivers employed by the employer's building supply yard, the drivers herein involved do not receive paid vacations or other employer benefits; and (10) testimony of both the employer and the drivers themselves indicates that both parties consider the relationship as one of employer-independent-contractor rather than employer-employee."

Local Limestone Quarrying is Interstate Commerce

In the El Dorado Limestone Co. case the National Labor Relations Board decided the employer was engaged in interstate commerce, within the meaning of the N.L.R.A., even though all the limestone produced was consumed within the State of California. The company's business was in excess of \$250,000 annually, and its chief customers were sugar refineries, metallurgical plants, and glass plants. The Board held: "These customers are engaged in interstate commerce, and they use crushed limestone which they purchase from the employer for the manufacture of their products. The value of such limestone to these customers alone exceeded \$155,000 in the last calendar year."

The employee whose "resignation" started the controversy and who the union contended was let out because of his union activities, was first employed in January, 1947. He quit voluntarily in April, but returned in July and worked until March 15, 1948, when he quit under the circumstances which brought the case before the N.L.R.B. for decision. During his original term of employment he lived in a village 5 miles from the plant with a relative and drove back and forth to work with the relative. When he was rehired, his relative no longer living in the village, and having no car, he took room and board at the limestone company's boarding house.

A consent election held March 11, 1948, resulted in the defeat of the union (the local of which this man was president). On the 15th of March, the superintendent called in the employee and reminded him that the union had lost the election, and accused him of trying to intimidate other employees into joining the union. The superintendent also remarked that the employee (this union president) had been complaining about the boarding house fare, was evidently dissatisfied, and consequently would have to leave the boarding house. The employee replied that since he had no car and there was no other place he could board, if he were required to leave the boarding house he would have to leave the job. To which the superintendent offered no objections, even though the plant

(Continued on Page 83)

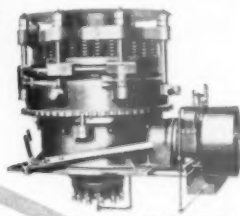
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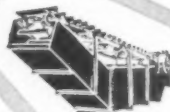
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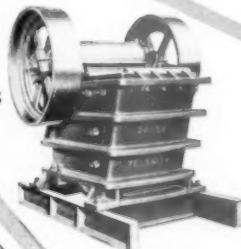


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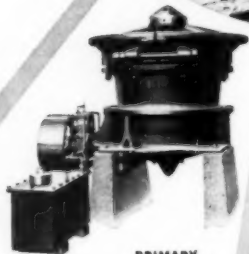


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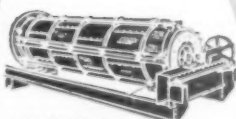
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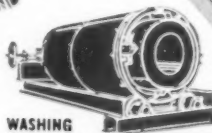
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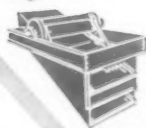
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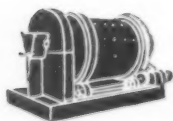
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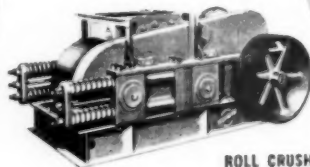
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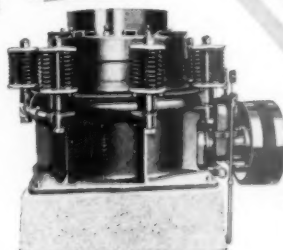
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the *Personal Side* of the news

C. of C. Speaker

VINCENT P. AHEARN, executive secretary of the National Sand and Gravel Association, Washington, D. C., was one of three speakers at the recent



Vincent P. Ahearn

annual meeting of the Chamber of Commerce of the United States. The subject of Mr. Ahearn's talk was "Management's Interest in the Issues—An Objective Appraisal and Summation." In his talk Mr. Ahearn said he believed he expressed the sentiment of most employers when he said that free trade unions are a necessary part of a free society, that employers realize collective bargaining in good faith between men of good will is a permanent part of our national policy, and want to make it work. He further stated, "I distrust elaborate proposals for establishment of a powerful governmental right to impose settlements through compulsory arbitration or the seizure of industrial plants and trade unions." He said he had faith in the capacity of Congress to write a law which will protect the legitimate interests of all of the parties to collective bargaining. In summing up his talk, Mr. Ahearn said, "In searching for the right answer to the problems which lie ahead, we must, above all else, not lose our perspective. We must have patience and we must have tolerance. Our nation was founded on an instinctive dread of centralized power. We have a tradition of freedom and individual responsibility which is too precious to be lost."

Service Engineer

JOHN E. McDANIEL, JR., has been appointed service engineer in the Memphis, Tenn., sales office of Marquette Cement Manufacturing Co., Chicago, Ill. He received his degree in indus-

trial engineering from Georgia School of Technology after spending three years in the U. S. Army. Before joining Marquette he was employed as civil engineer with the U. S. Corps of Engineers in the Little Rock, Ark., and Vicksburg, Miss., districts.

Named Plant Manager

RICHARD D. MAYNE, manager of the Hannibal, Mo., plant of Universal Atlas Cement Co., New York, N. Y., has been appointed manager of the plant at Hudson, N. Y., succeeding W. Scott Wilson who died May 15. A graduate in mining engineering from Carnegie Institute of Technology, Mr. Wayne joined Universal Atlas in Chicago in 1937 as industrial engineer. He served successively as superintendent of the gypsum operation at Clarence Center, N. Y.; quarry and mine superintendent at Hannibal, and assistant to general operating manager in New York. In 1943, he was appointed assistant plant manager at Hannibal, and three years later was named plant manager.

Visitor From India

A. K. MOHAN, chief engineer of The Associated Cement Cos., Ltd., Rohri-Sind, Pakistan, India, has been visiting various cement plants in the United States with a view to studying the latest technical developments. He is making a trip around the world by plane and has already visited cement plants and cement plant machinery manufacturers in Europe and England. He will return to India by way of Hawaii, Japan and China. Prior to starting on this trip, Mr. Mohan was serving as works manager of the Sind cement works in Pakistan.



A. R. Mohan

Heads Union League Club

GEORGE H. REDDING, president of the Massey Concrete Products Co., Chicago, Ill., has been elected president of the Union League Club of Chicago.



George H. Redding

He succeeds Frank C. Rathje, president of the Chicago City Bank and Trust Co. Mr. Redding has been associated with the concrete products firm since 1918, first as secretary and later as president. He is also president of the Canadian Concrete Products Co., Ltd., and past president of the American Concrete Pipe Association. He has been active in the affairs of the Union League Club for many years. He was a member of the board of directors for five years, including two terms as vice-president. He also served six years as a member of the public affairs committee, the last two years as chairman.

Assists President

IRA K. HEARN, JR., formerly works industrial engineer of ore mines and quarries, Tennessee Coal, Iron and Railroad Co., Bessemer, Ala., has been appointed assistant to the president of the Quebec Iron and Titanium Corp., a subsidiary of Kennecott Copper Co. He will make his headquarters in New York, N. Y.

Public Relations Speaker

CLAYBOURNE WILDER, assistant general manager of Hart Concrete Products Co., Tampa, Fla., recently addressed the Tampa Ad. Club on public relations in the concrete products industry. Mr. Wilder was in charge of concrete shipbuilding at the McCloskey shipyards in Tampa during the war.

District Engineer

JAMES D. PIPER, formerly district highway engineer in the Dallas, Texas, office of the Portland Cement Association, Chicago, Ill., has been appointed district engineer in charge of the Austin office which has been consolidated with the Dallas office into a single district office. Charles A. Clark, who has been with the Association for more than 27 years, will be office engineer. Mr. Piper joined the P.C.A. in 1937 as a structural engineer in Oklahoma City. In 1939 he was transferred to the Austin district as a structural engineer for the northern half of Texas. He left the Association in 1942 to accept a commission in the U. S. Navy Civil Engineers Corps (Seabees), and served in the South Pacific with the 61st U. S. Naval Construction Battalion, attaining the rank of Lieutenant Commander. He returned to the Association in 1945 as a structural field engineer with headquarters in Houston. One year later he was appointed district highway engineer, directing promotion and technical service in the highway bridge and paving field throughout the State of Texas.

P.C.A. Engineer

HAROLD G. GARNER, paving engineer in the Topeka, Kan., area of the Portland Cement Association, Chicago, Ill., has been appointed district engineer in the Omaha, Nebr., office. He succeeds C. W. Hiner, who passed away on April 11. Upon graduating from the University of Missouri in 1930, where he majored in geology and chemistry, Mr. Garner joined the Missouri State Highway Department as division soils engineer, covering the Kansas City and St. Joseph divisions. In 1940 he became associated with the Portland Cement Association as soil-cement engineer, covering the Omaha district. Three years later he was transferred to the Washington, D. C., office as paving engineer, and in 1946 went to Topeka, Kan., in the same capacity. As district engineer of the Omaha office, Mr. Garner will direct Association field work in the entire state of Nebraska, under the general supervision of R. F. Dierking, west central regional manager.

Certificates of Honor

DAN HANDLEY of the Ironton, Ohio, plant of Alpha Portland Cement Co., Easton, Penn., and WALLY KOLAR of the Cementon, N. Y., plant have been awarded Certificates of Honor by the Joseph A. Holmes Safety Association, in recognition of their long-time service in promoting health and safety in mine and quarry operations. JESSE KENNEDY of the Howes Cave, N. Y., plant of North American Cement Corp., New York, N. Y., has also been awarded a certificate for his 50 years'

service as a carpenter in cement plants without incurring a lost-time injury.

The Association was organized in 1916 to perpetuate the work of the late Dr. Joseph Austin Holmes, first director of the Bureau of Mines, which sponsors the Association's work in promoting safety in the mineral industries.

Named Treasurer

JACK MERRITT, assistant to the president of the Universal Concrete Pipe Co., Columbus, Ohio, has been named treasurer of the company. He succeeds W. E. Bishop, who has resigned to enter private business. Mr. Merritt is a graduate of Ohio State University, College of Commerce, and a veteran of three and one-half years of service with the 3rd Armored Division in the European theater of operations.

Traffic Club Officers

RUSSELL W. HUNT, president and general manager, Southwest Lime Co., Neosho, Mo., and EARL C. TOUTZ, vice-president and secretary, Independent Gravel Co., Joplin, Mo., have been appointed officers of the Tri-State Traffic Club of Joplin, Mo. Mr. Hunt was named second vice-president representing Missouri. Mr. Toutz was a member of the committee in charge of the meeting.

Ends 40 Years' Service

FRED A. BRINE, assistant sales manager of the Pittsburgh territory of Universal Atlas Cement Co., New York, N. Y., has retired after 40 years of continuous service with the company. Mr. Brine joined Universal in 1909 as correspondent at the Pittsburgh office and became a salesman in 1910. He was appointed division sales manager in 1919, district sales manager in 1930 and assistant sales manager in 1939.

Manager of Operations

TOM W. RYAN has been appointed manager of operations of Basic Refractories, Inc., Cleveland, Ohio. He is a former executive vice-president and director of the St. Johns River Shipbuilding Co. He is a graduate of Massachusetts Institute of Technology where he majored in civil engineering.

Institute Chairman

DR. WILLIAM B. MATHER, nationally known economic geologist, has been appointed chairman of mineral technology of the Southwest Research Institute in Houston and San Antonio, Texas, where he will have charge of ceramics, metallurgy, mineralogy and geology. He was formerly on the staff



Winners of the Marquette Cement Manufacturing Co. annual inter-plant bowling tournament are employees of the Nashville, Tenn., plant. They are, left to right: top, plant superintendent William Moyle, Leslie Hendricks, William Wray and Gene Smith; bottom, Elmore Denning and team captain Howard Hendricks. The tournament took place May 14 in Chicago, Marquette's headquarters, with teams from plants at Oglesby, Ill., Des Moines, Iowa, Cape Girardeau, Mo., and Nashville competing. The winners received the Marquette Inter-Plant Championship Trophy which was presented to them by Marquette's director of operations, D. S. Colburn, at a banquet in honor of all participating teams.

OBITUARIES



Dr. William B. Mather

of the Midwest Research Institute at Kansas City. Dr. Mather received his education at McMaster University in Ontario and the University of Chicago. He was an aeronautical engineer with the Royal Canadian Air Forces during the war.

Convention Committee

A JOINT COMMITTEE has been appointed by W. S. WESTON, JR., president of the National Crushed Stone Association, and H. C. KRAUSE, president of the Agricultural Limestone Institute, to develop a coordinated pattern of events for the conventions and exposition to be held at the Stevens Hotel, Chicago, the week of January 30, 1950. This committee is composed of W. S. Weston, Jr., Otho M. Graves, and Russell Rarey, for the National Crushed Stone Association; H. C. Krause, H. A. Clark, and P. E. Heim, for the Agricultural Limestone Institute; and Cottrell Farrell, for the Manufacturers Division.

Heads Engineers' Club

PAUL LALIBERTE, vice-president and treasurer of Cutler-LaLiberte-McDougall Corp., Duluth, Minn., has been elected president of the Engineers' Club of Duluth. Other officers are R. L. Fitzgerald, first vice-president; H. A. Barber, second vice-president; J. C. Haroldson, secretary; and R. N. Bateman, treasurer.

Correction

IN THE JUNE, 1949, issue of ROCK PRODUCTS, page 83, the captions for the pictures of Clarence L. Laude and H. Ripley Schemm should be transposed. Mr. Schemm's picture appears at the bottom of the page, and Mr. Laude at the top, right.

MARK O. WARD, manager of the Cincinnati district of the replacement tire sales division of The B. F. Goodrich Co., Akron, Ohio, died on April 22, following a brief illness. Mr. Ward started with the company in 1911 as a clerk in the foreign advertising department at Akron. He later served in the field as a tire adjuster in the Omaha and Dallas districts, was a division credit manager for three years, manager of pneumatic sales in the New York district and on special sales assignments before his appointment as Cincinnati district manager in 1924.

DAVID F. GROVE, retired stationary engineer at the Northampton, Penn., plant of the Universal Atlas Cement Co., New York, N. Y., died on May 24. He was 71 years old and had been in ill health since last December. Mr. Grove had been associated with the company since 1905 when he was assigned to the Northampton plant by the Atlas Cement Co. He retired eight years ago.

FREDERICK BINNS KILBOURN, president of the Canada Cement Co., Montreal, Canada, died suddenly of a heart attack on May 20 while aboard a train leaving Montreal for New York. He was planning to attend a convention in Warm Springs, Va. Mr. Kilbourn was also president of Canadian Refractories Ltd. and Dolomite Refractories Ltd. Born in Owen Sound, Ontario, in 1883, he started his career in the cement industry by discovering that the rock formation of Montreal Island was suitable for cement. He persuaded the Lakefield Portland Cement Co. to build a plant, around which the Montreal East plant later developed. At the age of 21, he supervised construction of the plant and operated it after its completion, continuing to do so after Canada Cement

Co. took over. Mr. Kilbourn was superintendent of No. 1 plant of Canada Cement Co. from 1909 to 1919, then serving as general superintendent until 1939. He was elected a director of the company in 1931, six years later was named vice-president, assistant general manager in 1939, general manager in 1942 and president in 1948.

JAMES SHIELDS, secretary and assistant treasurer of the Macleod Co., Cincinnati, Ohio, manufacturers of sand blast and contractors equipment, died April 28. He had been associated with the company for 30 years.

OSCAR BLODGETT COLWELL, former owner and operator of O. B. Colwell & Sons, Watertown, N. Y., now known as Colwell Brothers, died May 5 at the age of 74. Mr. Colwell established his sand and gravel plant in 1920 and continued in business until last fall when he retired, transferring the business to his sons, Victor and Oscar.

PARK T. ROBINSON, son of one of the founders of the Robinson Clay Products Co., Akron, Ohio, died recently in Laguna Beach, Calif., where he had resided for many years. He was born in East Akron, Ohio, and lived there until 1919 when he moved to Los Angeles, later going to Laguna Beach.

ROLLIN H. ORR, superintendent of the Rubber City Sand and Gravel Co., Akron, Ohio, died suddenly on May 15. He was 73 years of age and had lived in Akron for 55 years. He was a member of the Fifty Year Club.

WILLIAM SCOTT WILSON, manager of the Hudson, N. Y., plant of Universal Atlas Cement Co., New York, N. Y., died on May 15 at his home in Greenport. He was 57 years old and had been in ill health for several weeks. Born in Aurora, Ill., in 1892, he joined the Northampton plant upon graduating from Cornell University in 1914. Later in the same year he transferred to the Hudson, N. Y., plant, serving in all departments before being named assistant plant manager in 1923. He was made plant manager in 1944, succeeding the late Richard A. Dittmar, who was promoted to chief engineer in the New York office.

BERTRAM L. SWETT, retired vice-president and general sales manager in the New York, N. Y., office of Lehigh Portland Cement Co., Allentown, Penn., died in his sleep on May 14 in his apartment in the New York Athletic Club. He was 67 years old. Mr. Swett started his career in the cement industry in 1898 as an office boy with the Atlas Cement Co. He joined Lehigh in 1906, subsequently becoming assistant western sales manager. He was made Eastern sales manager in 1912, and vice-president and general sales manager in 1926.

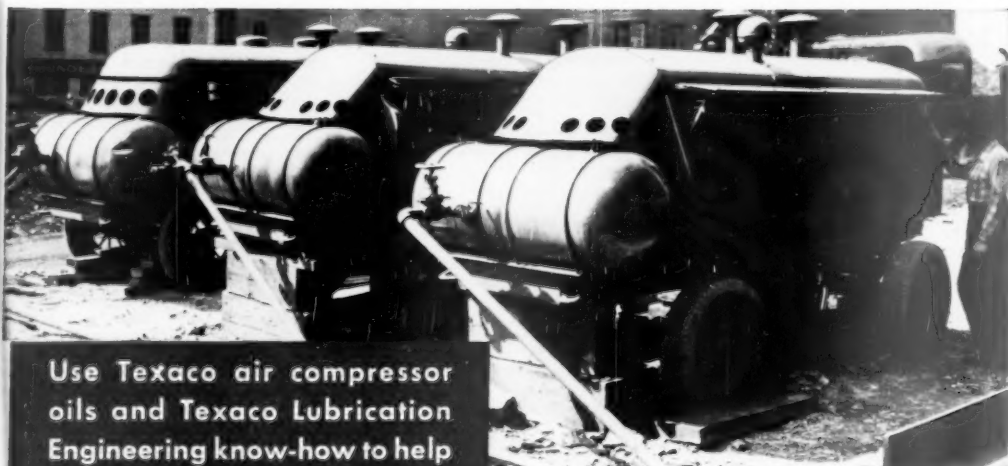
JAMES H. MCCRADY, III, secretary of the McCrady-Rodgers Co., Pittsburgh, Penn., was killed recently in an automobile accident in Pittsburgh.



Frederick B. Kilbourn

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INDUSTRY

News

State Cement Plant Expansion Program

RAPID CITY, S. D., is expected to begin work shortly on expansion of the State cement plant following sale of \$1,500,000 in bonds authorized at the recent session of the legislature for the expansion program. Complete plans for the program have been prepared and preliminary arrangements have been made for the work which will double the capacity of the state-owned operation. Present capacity is 2000 bbl. of cement per day.

The program calls for installation of a new kiln, 11 ft. in dia. and 375 ft. in length, according to John Wilson, secretary of the State cement plant commission. New storage silos also will be erected, and minor modifications of the present plant must be made to utilize the new kiln.

Quarry Opened

ALEXANDRIA ROCK QUARRY, Alexandria, S. D., now owned by Tobin Quarries, Kansas City, Mo., has been opened to furnish 600,000 tons of crushed rock for the construction of Fort Randall dam south of Lake Andes. According to Chet Roweth, general superintendent of the quarry and vice-president of the Tobin firm, 30,000 tons of crushed rock must be stockpiled before shipment to the dam site can begin. After fulfilling the Fort Randall contract, quarrying operations will continue on a commercial basis. At the peak of operations, 40 carloads of crushed rock will be sent per day over a specially constructed 5000-ft. spur line of the Milwaukee railroad. Plans call for crushing about 2000 tons of the quartzite per day, but if necessary 3000 tons will be crushed per day.

Installs Dust Collector

MICHIGAN LIMESTONE & CEMENT CO. has installed a dust collector to filter out particles of limestone dust from the discharge of a dryer kiln stack at its plant in Buffalo, N. Y. Limestone dust is being recovered at the rate of 500 lb. per hr., or 6 tons per day, and tests have proven the equipment to be 98 percent efficient. The reclaimed material, a finished product, is used for agricultural purposes, principally as fertilizer and poultry food.

To further reduce air pollution in

the area the company also has replaced two steam locomotives with a diesel engine; has installed a dust collector for the plant's ventilating system, and has converted coal-burning heating units to oil, Thomas Rose, supervisor, announced.

Sand and Gravel Plant

CONSOLIDATED STONE AND SAND CO., Montclair Heights, N. J., said to be one of the largest firms of its kind in the State, has been supplying crushed stone for road construction and maintenance in the area for many years. The plant site covers 100 acres where, besides the crushing plant, there are batching facilities and a complete bulk cement plant. Crushing plant capacity is 3000 t.p.d. Arthur S. Marsellis is president and treasurer of the firm; Robert J. McCarthy is vice president, and Mrs. Mary Mitchell is secretary.

City Buys Gravel Pit

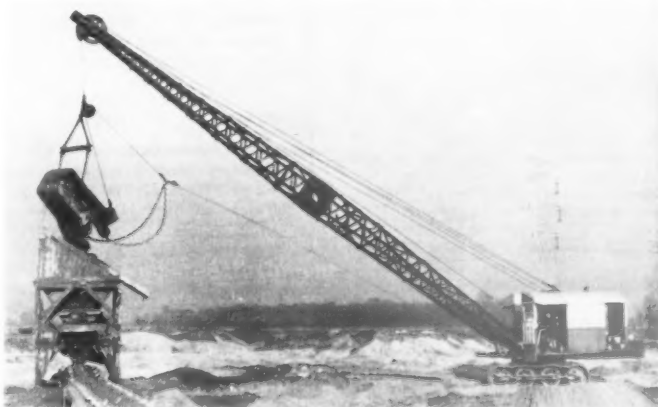
THE CITY of Bellingham, Wash., recently purchased a \$3000 gravel site adjacent to its rapidly exhausting gravel pit. It was said that the new source will supply the city for about three years.

Inspect Quality of Limestone

APPARENTLY, judging from a report from Iowa, more attention will be paid to the quality of agricultural limestone being delivered to farmers. County Production and Marketing Administration committees have been instructed to check more specifically and carefully on quality, taking samples of limestone being delivered to farms under its program. If two consecutive samples are received which do not meet specifications, the quarry operator will be notified of the additional tonnage to be delivered in order to compensate for quality deficiency.

Silica Sand Operation

W. A. SCHOEPE and I. P. ARNOLD have placed in operation a new silica sand grinding section at their clay and silica sand plant located near El Toro, Calif. Ultimate production will include both high quality silica sand and high-grade china clay for the ceramic industry. Equipment in the sand section includes a 6- x 16-ft. pebble mill, Dings stationary magnet, 10- x 32-ft. x 12-in. dryer, all housed in a new 40- x 100-ft. steel and aluminum sheeted building. Both diesel and electric power are available.



Spickelmier Sand and Gravel Co., Indianapolis, Ind., recently repaired its Model 506 Lima dragline with a Model H15-600 Cummins diesel. The dragline is equipped with a 60-ft. boom, and, since repowering, the drag bucket size has been increased from 1½ cu. yd. to 1½ cu. yd. Present capacity of the unit is about 180 t.p.h. Material is emptied into a hopper in the pit and carried by belt conveyor to the plant. The diesel operates 8 hr. per day on 30 gal. of fuel.

Agriculture Appropriation Bill in Senate

THE SENATE APPROPRIATIONS COMMITTEE has reported out the Agriculture Appropriation bill (H.R. 3997) recommending the same amount of money (\$257,043,439) for the 1949 agricultural conservation program as was passed by the House on April 5 and raising the authorization for 1950 to \$300,000,000, an increase of \$37,500,000 over the figure passed by the house.

Other changes in the bill reported to the senate are: lowering of the maximum of \$2500 that can be paid to any participant in the agricultural conservation program to \$1500; a deletion of the clause that would permit any county P.M.A. committee to allot 10 percent of its funds to the soil conservation service for technical and other assistance in the county; and reinsertion of the clause that prohibits the use of funds to pay salaries of regional, state, or county information employees. This provision has appeared in the appropriation bill for a number of years, but was removed in the Spring by the House Subcommittee on Agricultural Appropriations.

As stated in a letter to the industry by the Agricultural Limestone Institute, although the bill now must be debated and passed by the Senate, it appears certain that the appropriation for the 1949 program will be \$257,043,439. The figure of \$300,000,000 for the 1950 program must be approved by the Senate and is subject to change in conference.

Cement Plant Expansion

IDEAL CEMENT Co., Denver, Colo., has announced installation of a new 250-ft. kiln at its Trident plant in Bozeman, Mont., as part of a ¼-million dollar expansion program at that plant. The new kiln is said to boost cement production approximately 1000 bbl. per day. The kiln augments three 140-ft. kilns which altogether turn out about 3000 bbl. of cement per day.

Other improvements include addition of five larger grinding mills, new air separator equipment, and changes in conveying and elevating machinery. Seven kinds of cement are produced at this plant including standard portland cement, a low alkali-resistant cement, a high-early strength cement, an oil well cement, a high alkali-resistant cement and a masonry cement.

Limestone Quarry

THE MARYLAND STATE BOARD OF PRISON CONTROL has received authority to operate a limestone quarry on property occupied by the State Reformatory for Males. Agricultural limestone produced will be handled through farmer co-operatives, or it may be bought directly by farmers on an "at the plant basis." According

to Joseph Blanford, state head of the Production and Marketing Administration, legislative authority and a \$300,000 bond issue have been granted to the Prison Control Board.

Installs 650-ft. Conveyor

AUGLAIZE STONE Co., Spaulding, Ohio, has installed a long belt conveyor which will carry crushed limestone from the quarry floor to the secondary crushing equipment and storage bins. The belt receives its feed from the primary crusher in the quarry which handles rock up to 30 x 40 in. in size. The conveyor belt is 650 ft. long, 30 in. wide, and elevates to a height of approximately 95 ft. It is completely inclosed in steel metal housing. Plant capacity is expected to reach approximately 100 t.p.h., James Schroyer, president, said.

Aggregates Plant

EUGENE YEAGER AND LELAND MALOY have set up a sand and gravel plant on Yreka Creek, near Yreka, Calif., where old placer tailings are being mined to a depth of 8 ft. with a drag-line. Material under 3 in. in size is pumped to the screening plant by a centrifugal pump through 300 ft. of 6-in. steel pipe. The power and pumping plants are mounted on a barge built on four large navy rafts. Plant capacity is 125 cu. yd. of sand and gravel per day.

Arizona Cement Plant

ARIZONA PORTLAND CEMENT Co., subsidiary of the California Portland Cement Co., now under construction at a sidetrack called Rillito, Ariz., on the main line of the Southern Pacific Railroad, is expected to be in operation by Fall, producing cement at the rate of 2000 bbl., or 8000 sacks, per day. The \$1,300,000 plant will obtain its raw materials from limestone, clay and gypsum deposits in the area, and shipment will be by rail, or by truck over U. S. Highway 84.

Buys Agstone Plant

CHARLES A. COBURN, former executive vice-president of the Carbon Limestone Co., Youngstown, Ohio, has completed negotiations for the purchase of the Waukesha Lime & Stone Co., Waukesha, Wis. The purchase was made from the John O'Laughlin estate, which had been operating the company for 44 years. Mr. Coburn stated. Crushed stone for highway and concrete construction and agricultural limestone are being produced.

Receive Safety Award

NEW YORK TRAP CORP., New York, N. Y., has announced that three of its plants have been awarded Certificates of Honor by the Bureau of Mines' Joseph A. Holmes Safety Association. Tomkins Cove Quarry, Tomkins Cove,

Coming Conventions

**Week of
September 25, 1949—**

American Institute of Mining and Metallurgical Engineers, Mid-Year Meeting, Ohio State University, Columbus, Ohio.

October 10-14, 1949—

American Society for Testing Materials, 1st National West Coast Meeting, Fairmont Hotel, San Francisco, Calif.

October 24-28, 1949—

37th National Safety Congress and Exposition, Chicago, Ill.

**Week of
January 22, 1950—**

National Sand and Gravel Association, 34th

Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

**Week of
January 22, 1950—**

National Ready Mixed Concrete Association, 20th Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

**Week of
January 29, 1950—**

National Crushed Stone Association, 33rd Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

February 1-3, 1950—

Agricultural Limestone Institute, 5th Annual Convention, Stevens Hotel, Chicago, Ill.

N. Y., operated without a fatality for 20 years, January 1, 1929, to January 1, 1949, with an average of 115 employees working 4,064,335 man-hours and handling 12,864,833 tons of rock. Haverstraw Quarry, Haverstraw, N. Y., quarried 9,081,459 tons of rock with 115 employees working 2,351,905 man-hours from March 8, 1938, to January 1, 1949, without a fatality. Clinton Point Quarry, Stoneco, N. Y., quarried 18,441,784 tons of rock with 130 employees working 4,807,827 man-hours from January 1, 1930 to January 1, 1949, without a fatality. John Jorgensen is superintendent of the Tomkins Cove plant; Greer Tomlins is superintendent at Haverstraw, and William S. MacHenry is superintendent at Clinton Point. Formal presentation of the awards will be made to the plants by S. H. Ash, chief, Safety Branch, Health and Safety Division, U. S. Bureau of Mines, at the company's annual clambake in August.

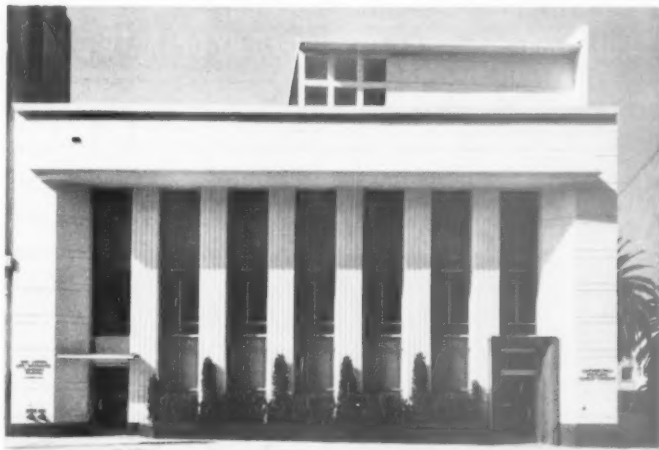
Kentucky Crushed Stone Producers Meet

THE KENTUCKY CRUSHED STONE ASSOCIATION held its 6th annual meeting at the Seelbach Hotel, Louisville, Ky. The Board of Directors session was held in the morning and the general membership meeting took place in the afternoon. The following speakers were heard: Henry A. Huschke, Agricultural Limestone Institute, Washington, D. C.; W. J. Crouse, Deputy Commissioner of Rural Highways; M. F. Johnson, director, Division of Maintenance, and George H. Hailey, director, Division of Rural Highways, all of Frankfort, Ky. In the evening, a cocktail party and banquet were held for members, state officials, and their wives, at which time Leland Stowe, foreign correspondent, discussed "We Still Have Time to Win Peace."

The following officers were elected: president, A. D. Gorman, Flemingsburg, Ky.; vice-president, J. F. Pace, Marrowbone; treasurer, J. R. Thompson, Frankfort; and secretary, Martin Smith, Frankfort. Directors for the ensuing year are: T. C. Adams, James B. Allen, G. O. Bassett, W. E. Covington, David McLellan, and Mrs. S. D. Pace.

Safety Conference

THE PORTLAND CEMENT ASSOCIATION held its regional safety conference at Duluth, Minn., the latter part of April, with officials of the Universal Atlas Cement Co. as hosts. Theme of the meeting was "Better Methods for Safer Jobs," which was discussed by C. W. Edmunds, superintendent, Canada Cement Co., Ltd., Fort Whyte, Man., plant; Fred B. Hunt, manager, Dewey Portland Cement Co., Davenport, Iowa, plant; A. J. John, manager, Lehigh Portland Cement Co., Mason City, Iowa, plant; J. C. Ben-



New home office building of Southwestern Portland Cement Co., Los Angeles, Calif., has alternating columns of windows and concrete pillars. The building, located on a site 60 x 130 ft., is composed of two stories, a garage, and a penthouse with an adjoining sun-deck. Architectural concrete was the basic building material. Frank H. Powell is president of Southwestern Portland Cement Co., C. C. Merrill is vice president and general manager, T. K. Partridge is general sales manager, M. A. Koffman is secretary-treasurer, and R. H. Fielding is assistant secretary-treasurer.

nett, superintendent, Marquette Cement Manufacturing Co., Des Moines, Iowa, plant; F. E. Smith, superintendent, Northwestern States Portland Cement Co., Mason City, Iowa, plant, and R. A. Bechtold, superintendent, Pennsylvania Dixie Cement Corp., West Des Moines, Iowa, plant. J. R. D. Brown, Chicago, Ill., represented the Portland Cement Association, and Fred Robinson, manager of the Duluth plant of Universal Atlas Cement Co. was chairman.

Reorganize Stone Company

WEST TEXAS STONE Co., Austin, Tex., has been purchased by an organization of Austin businessmen. General headquarters will be maintained in Austin. Stone deposits and a processing plant are located at Lueders where production of stone to building specifications will be continued. Initial officers of the businessmen's organization are: C. H. Owens, president; Stanley Smith, vice-president, and E. L. Bauknight, secretary-treasurer.

Rehearing Fails on Cement Rate Case

THE KANSAS SUPREME COURT denied the State Corporation Commission a rehearing in its attempts to institute an investigation of Kansas cement freight rates. The Commission sought rehearing after the Supreme court affirmed a Shawnee county district court decision setting aside the commission's investigation order.

Lends Equipment for Tornado Relief Work

MARQUETTE CEMENT MANUFACTURING Co., Chicago, Ill., has announced that facilities and equipment of the Cape Girardeau, Mo., plant were put at the disposal of disaster relief authorities after a tornado hit Cape Girardeau, May 21, killing 21 residents, injuring 72, and destroying or damaging 433 homes. The Marquette plant escaped damage and plant trucks, bulldozers, power drills, shovels, scoops and draglines were offered, with operators, to speed the relief work. The company temporarily withheld cement shipments out of that plant to other areas, granting priority to local dealers in order to assure prompt availability of cement for the duration of the emergency.

State Magnesium Plant

FINAL SIGNING of transfer deeds for the Basic Magnesium plant in southern Nevada will be completed in the near future, according to Attorney General Alan Bible at Carson City, Nev. The State has agreed to purchase the plant for \$124,000,000, on a 20-yr., pay-as-you-go basis.

Acquires New Properties

COLONIAL SAND & STONE Co., INC., Waterbury, Conn., has acquired sand and gravel properties at Roslyn, Hempstead Harbor, N. Y., from the New York Trap Rock Corp. at a cost of \$2,800,000.

HINTS *and* HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Silo Hook-Up

AT A READY-MIXED CONCRETE PLANT in the South, three steel silos hold a total of 1750 bbl. of bulk cement. The main set-up is conventional in that



Two silos feed same conveyor

a screw conveyor takes the material from the track hopper to the main and only bucket elevator and delivers it to either the day bin over the Butler batching equipment or sends it to one of the silos. At the same time, the silos can feed back to this same screw conveyor. The illustration shows how two of the silos are connected to the conveyor. Both have flat slide gates with air agitators in the throat outlets of the tanks. No flooding troubles were said to result from the installation.

Riprap Screen

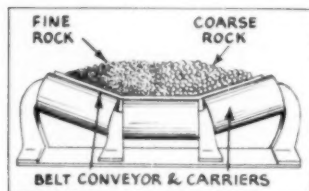
AT A QUARRY producing riprap in the South, the problem of delivering rock in sizes from 10 in. dia. to three tons has necessitated the use of a riprap screen, as shown in the illustration. It is a stationary unit, so constructed that the whole assembly can be moved about the quarry floor. The screening section is a heavy piece of manganese steel plate about 5 ft. wide and 20 ft. in slope length, and has 10-in. dia. circular openings. It is mounted on 8-in. "I" beam posts.

Plus 10-in. rock is delivered by shovel to the stone box at the top of the rig, the fines falling to the ground under the rig. Riprap can either fall to the ground or to a truck as the unit is high enough for that purpose; how-

ever, at this operation the material falls to the ground, to be "dozed" away later.

One Belt Conveyor for Two Products

NORTHWEST MAGNESITE CO., Chewelah, Wash., has a large milling installation devoted to the beneficiation of magnesite. A 20-ft. Wemco heavy media (sink float) cone is used for the separation of the magnesite ores from waste. For the finer sizes, flotation is used involving several banks of Fahrenwald flotation cells. To prepare the pit run ore for the sink-float operation, several crushing and screening steps are involved to acquire a minus 1 1/4-in. plus 1/4-in. feed for the sink-float cone. Inter-plant transportation of this material is mostly by belt conveyor. At one place in the flow, a conveyor belt accomplishes two purposes. One half of the belt carries a



Two products are carried on one conveyor belt

fine crushed product and the other half carries the coarser size, a practice which could find many applications in the rock products industries.

Dividing Walls

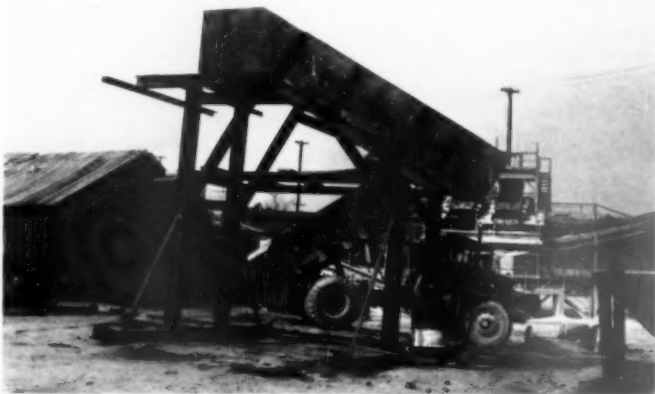
WHEN W. R. CLIFFE, consulting engineer, L.I.M.E., Hershey, Penn., designed the plant of the Lime Products Co. at Cleburne, Texas, he pro-



General design of separating walls between storage piles of sized stone

vided for pockets in the storage end, each of which holds 1000 tons of sized stone. General design of the separating walls is shown in the photograph. The floor of the storage section is concrete also.

The four sizes of stone stored here can be processed into agricultural limestone or finely ground limerock. Pre-sizing is accomplished with two Hummer vibrating screens—one 2-deck and one 3-deck unit—both mounted over four-compartment steel bins.



Screen for delivering riprap to trucks or ground storage

Portable Batching Plant

AN AGGREGATE PRODUCER in New Mexico also operates a concrete block plant and sells ready-mixed concrete. In the latter phase of the business, the company often is called on to pour concrete at distances too far to be handled economically by the conventional mixer trucks. When faced with this problem, the company has assembled a portable batching plant which is taken near the construction job. Ordinary dump trucks then deliver proportioned dry mix, from the main plant, to the portable loading hopper serving an inclined belt from which the mix is dumped into one of the mixer trucks. In this manner a small number of mixer trucks can handle a large pour since the ordinary dump trucks, of which the company has a large fleet, are used for the major part of the haul from the main plant.

Sand Drainage

AT ONE OF THE LARGE DAMS under construction in the Southeast, a sand is processed from minus $\frac{3}{4}$ -in. granite screenings. A feature of the sand plant is the use of an 8- x 12-ft. peripheral discharge Marcy rod mill that operates wet in conjunction with a Dorr rake classifier, or de-waterer.

An inclined off-bearing belt, working in conjunction with a shuttle conveyor, builds up four stockpiles of sand over a large diameter, steel-lined reclaiming tunnel. Near the ground line of the tunnel, on both sides, have been placed two 8-in. dia. drain tile outlets for water draining out of the piles. This water first drains around the outside of the steel tunnel and then finds a final outlet through the drain tiles.

In maintaining the four stockpiles of sand over the tunnel, No. 1 is built



Standard dump trucks deliver dry mix from plant to this portable batching plant set up near construction site. Mixer trucks deliver from portable unit to job.

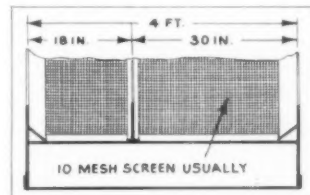
up while Nos. 2 and 3 are draining. Reclaiming is from stockpile No. 4. When that pile is depleted, the system is switched around so that reclaiming is from pile No. 4, Nos. 2 and 1 drain, and No. 4 is built up. Thus the wet sand has approximately 72 hr. of drainage time.

Two Products on One Vibrating Screen

IN THE SINK-FLOAT PROCESS, which at times can find use in the sand and gravel industry for removal of water-

logged chips, clay balls and even opaline rocks, recovery of the media used comprises a greater part of the operation. To wash the entrained ferrosilican (or magnetite) from the "sink portion," or the "float portion," the materials pass over a suitable vibrating screen where wash water removes the finely ground media from the rock.

Usually there is a preponderance (by weight) of either the sink, or the float portions. For instance, for removal of water-logged wood chips from gravel, there naturally would be a greater amount of gravel than wood chips. In most cases the amount of the latter would be small in comparative weights,

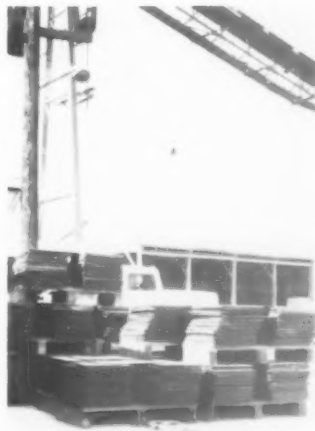


Sketch of multiple-use vibrating screen

logged chips, clay balls and even opaline rocks, recovery of the media used comprises a greater part of the operation. To wash the entrained ferrosilican (or magnetite) from the "sink portion," or the "float portion," the materials pass over a suitable vibrating screen where wash water removes the finely ground media from the rock. Usually there is a preponderance (by weight) of either the sink, or the float portions. For instance, for removal of water-logged wood chips from gravel, there naturally would be a greater amount of gravel than wood chips. In most cases the amount of the latter would be small in comparative weights,



Four stockpiles of sand allow for 72 hr. drainage



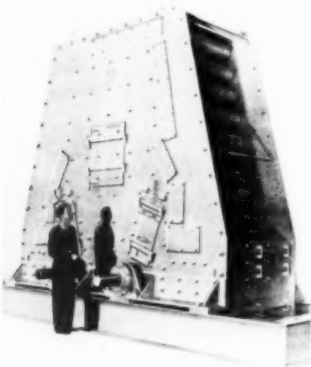
To make concrete block of uniform size, pallets should be thoroughly cleaned before using. The illustration shows how pallets look when properly cleaned and stacked

New Machinery

**ROCK
PRODUCTS**

Giant Impact Crusher

NEW HOLLAND MANUFACTURING CO., Mountville, Penn., is in production on the Model 5050 Double Impeller Breaker which is said to be the world's



Impact crusher capable of taking stone up to 50 in., reducing it to aggregate in one operation

largest impact stone crusher. The unit which weighs nearly 54 tons and stands 14 ft. high, can take stone up to 50 in. in size and reduce it to aggregate in one operation, the manufacturer states, adding that the crusher has been successfully tested for many months. Taking any stone fitting a 2-cu. yd. shovel, the 5050 will produce aggregate in two sizes, minus 8 in. and minus 3½ in. It is mounted on 18-in. I-beam skids and measures 14 ft. in length, and 9 ft., 6 in. in width.

When the unit is in operation, twin cast steel impellers, each weighing 13,400 lb., catch stone in mid-air as it enters the breaking chamber, and it is thrown against breaker bars set around the chamber. Each impeller has 3 pairs of 500-lb. manganese or alloy steel bars, reversible to provide two wearing edges. The impellers are capable of speeds up to 785 r.p.m., and require separate power units producing from 100-125 hp.

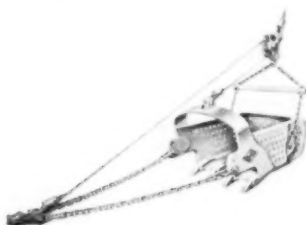
High carbon steel shafts have a diameter through impellers of 6½ in. Bearings are self-aligning heavy-duty, anti-friction type. The breaker bar, 8 in. in dia., is made of manganese and abrasion resistant steel, and this same steel is used in the 2-in. liner plates. Outer plates are 2-in. mild steel.

Other features listed by the manufacturer are a special apron feeder

weighing 25,475 lb. which is 50 in. wide by 14-ft., 6-in. centers. Pans have a 9-in. pitch and are 50 in. wide, weighing 371 lb. each. The head sprocket is of carbon steel with renewable manganese teeth.

Lightweight Dragline Buckets

PETTRONE MULLIKEN CORP., Chicago, Ill., has added a series of Featherweight Perforated Dragline Buckets to its line of materials handling buckets and dippers. The new units, said to be from 20 to 40 percent lighter than standard, are of welded construction with 14 percent manganese steel for the lip, and socket point type teeth, sheave, wire rope sockets and dump chain links. Especially wide set corner teeth and a sharp cutting edge require only ¾ of the drawbar pull of the average buck-



Lightweight dragline bucket with wide set corner teeth

et, and only ¾ of the distance of an average bucket is required for filling, the manufacturer states. Units are available in sizes from ¾ to 2 cu. yd. capacities.

Air Feed Sinkers

LE ROT CO., Cleveland, Ohio, has developed two air feed sinkers which employ light, fast-hitting drills and an integral reverse air cylinder type

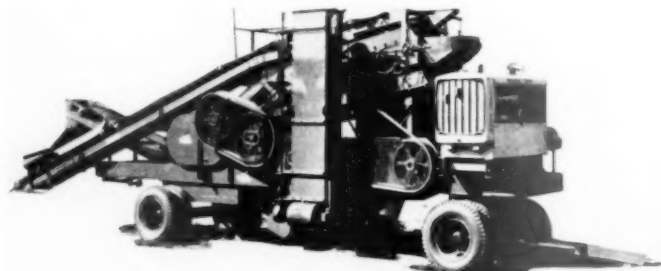


Air feed sinker with integral reverse air cylinder type feed

feed, company officials have announced. The sinkers have reverse feed control forged as an integral part of the drill cylinder, with handles located on either side for convenient operation. The units operate with carbide insert bits. Designated HC10R and HC23R, the drills are claimed to have very favorable performance in air consumption and speed of drilling in comparison with heavier drifters.

Portable Crushing Plant

PIONEER ENGINEERING WORKS, INC., Minneapolis, Minn., has added a new small gravel crushing and screening plant to its line of portable duplex plants. Designated as the 17-V, the plant is said to be ideal for smaller construction jobs, maintenance and



Portable crushing and screening plant with swivel type feeder conveyor

county work, and incorporates all features of the larger "bottom deck feed" plants. Features listed include a swivel-type feeder conveyor, 12-ft., 6-in. overall height, and V-belt or tumbler shaft and gear box drives. The delivery conveyor folds at the side. The plant has a 10- x 16-in. jaw crusher, a 24- x 16-in. roll crusher, and a 30-in. x 8-ft., 3½-deck vibrating screen that provides 40 sq. ft. of effective screening area. The chassis is two axle with four 9:00 x 20 tires front and rear.

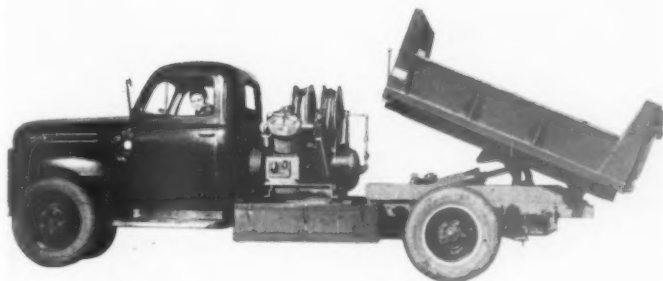
Motor Controller

WESTINGHOUSE ELECTRIC CORP., Buffalo, N. Y., has developed a high voltage, combination fuse-type, air break motor controller which is said to provide complete motor and starter protection. The unit may be used directly without further external protection on 3-phase, 50-60 cycle circuits capable of producing 150,000 k.v.a. at 2300 volts, or 250,000 k.v.a. at 4160 volts. They can be applied with unity power factor synchronous motors rated up to 900 hp. at 2300 volts or 1500 hp. at 4160 volts, or 80 percent power factor synchronous and squirrel cage induction motors rated up to 700 hp. at 2300 volts, and 1250 hp. at 4160 volts.

The new type AH, 3-pole magnetically-operated contactor was developed to provide a rugged, air break type which would give long service under severe operating conditions with a minimum of maintenance, the manufacturer states. Rated at 200 amperes, 5000 volts, it is said to eliminate the problem of handling oil associated with oil-immersed equipment, and together with its thermal overload relay, protects the motor against sustained overloads, locked rotor or stalled conditions, too frequent starting, under-voltage operation and faulty conditions within its interrupting capacity.



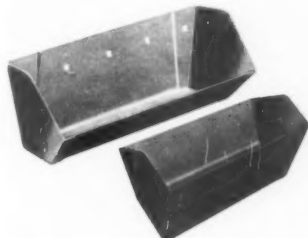
High voltage air brake starter



Combination compressor-dump truck

Elevator Bucket

LINK-BELT CO., Chicago, Ill., has announced a new, High-Speed Elevator Bucket which is said to embody all the essential basic principles for high-



"High-speed" elevator bucket

speed operation to attain maximum capacities in handling free-flowing materials. The new bucket is particularly recommended for handling lightweight, fluffy, granular, or powdered fine free-flowing materials that are not excessively abrasive. Buckets may be mounted on the elevator belt at intervals or continuously, depending upon capacities required.

Full-Vision Crane Cab

WHITING CORP., Harvey, Ill., has designed the Whiting Full-Vision Crane Cab for its cranes which is said to give the operator a lateral vision of 2/3 of a circle, and enable him to see almost straight down. The new cab uses magnetic switching controls, thus eliminating drum-type controllers, is weather-proofed, and may be provided with air-conditioning, telephone communication and fluorescent lighting if desired.

Compressor-Dump Truck

DAVEY COMPRESSOR CO., Kent, Ohio, is producing an "Auto-Air" compressor-dump truck combination unit consisting of either a Model 105 or 160-c.f.m. Auto-Air compressor mounted ahead of a standard dump

body on the truck chassis. The compressor is driven direct from the truck engine through a heavy duty power take-off. The dump body can be employed to haul rock, broken pavement or other materials dislodged by the compressor, and the unit can function as a regular dump truck when the compressor is not in use.

Nylon Cord Tire

THE B. F. GOODRICH CO., Akron, Ohio, has developed a line of off-the-road tires made with nylon cord throughout, and a nylon shock shield. Advantages of this construction listed by the manufacturer are: in a two-year testing program on toughest operations there was not a single blow-out; tire body strength is increased because the same number of plies are being maintained in each tire, and nylon cord will withstand more than double the impact without rupturing than old-style tires; no flex failures have been reported in the testing program. Another advantage listed is that users will be able to have a larger percentage of these tires recapped.



Off-the-road tire made with nylon cord throughout

NEW MACHINERY

Crane Carriage

KEYSTONE DRILLER CO., Pittsburgh, Penn., has developed the Keystone Crane Carriage, a one-man, self propelled mounting for all makes of



Self-propelled crane mounting

cranes from 10- to 25-ton capacity. Propulsion power is obtained through the travel clutches and vertical travel shaft of the crane. The carriage is equipped with a four speed transmission with a speed range of 2 to 10 m.p.h. in either direction. There is complete control of the entire machine from the operator's seat in the cab regardless of its position on the carriage. Other features listed by the manufacturer are a short turning radius for narrow roadways, air-operated brakes on all wheels, and hydraulic steering.

Pneumatic Vibrators

THE CLEVELAND VIBRATOR CO., Cleveland, Ohio, has announced the Series "SA" pneumatically-operated vibrators which feature low air consumption, minimum number of parts, and instant starting with full power. The vibrators are recommended for such applications as settling the mix in concrete products and block machines, vibrating tables, moving granular materials through chutes, and other applications where constant or intermittent vibration is necessary.

Dipper Attachment

HYSTER Co., Portland, Ore., has started production of a $\frac{1}{2}$ -cu. yd. capacity hoe front which has been added to the dragline clamshell, and crane features of the Hyster Hystaway, an attachment for use with "Caterpillar" track-type tractors. The hoe dipper has a cutting width of 33 in., and for narrow ditching requirements an optional dipper of 23 in. width may be substituted. The hoe is said to be able to reach farther into the excavation than other conventional machines

of comparable size because the center of swing is beyond the crawler.

Full tractor mobility, maneuverability and conversion features are retained with the new hoe front, the company states, and quick change-over from one front end attachment to another is easily accomplished. Utility use of the bulldozer is possible with the Hystaway installed. It takes approximately an hour to dismount the Hystaway unit to allow full use of the bulldozer.

Center Dump Gravel Trailer

OMAHA STANDARD, Council Bluffs, Iowa, is manufacturing a custom designed center dump semi-trailer, gravel, earth and rock body which has a low center of gravity, permitting dumping operations on terrain prohibitive to use of hydraulic end dumps. A metered control to permit door openings from 4 to 16 in. is provided which can be pre-set by hand at any time, either

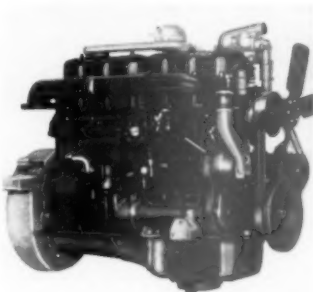


Center dump semi-trailer, gravel, earth and rock body

loaded or unloaded, so that it no longer is necessary to regulate flow of material by excessive high or low speed of the motor truck during dumping operations, the manufacturer explains. Door mechanism is enclosed and protected from the flow of material.

New Diesel Engines

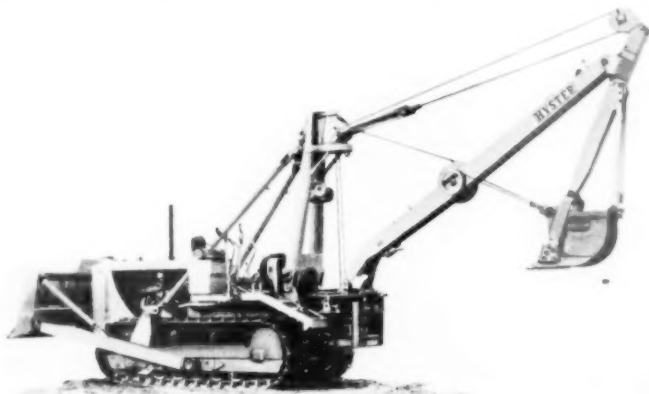
MACK TRUCKS, INC., New York, N. Y., has developed three new diesel engines, the END 457, 510 and 672, which have been designed and built



Six-cylinder END 672 diesel engine

for Mack Trucks exclusively. Operating on the four-stroke cycle, the engines are made to provide controlled combustion and maintain low peak pressures. A special combustion chamber design is said to produce extremely high turbulence which results in thorough and complete combustion to exert a sustained pressure and produce a smooth, powerful piston thrust. At the same time rate of combustion is controlled, avoiding the hammer-blow effect on pistons commonly associated with diesels having uncontrolled characteristics. The company describes the units as smokeless, odorless and free from strain.

Other features listed by the manufacturer include variable and automatic injection timing for utmost available power and torque at all speeds, and fuel economy; and a close-coupled fuel injection pump mounted on the block for equal injection of fuel to all cylinders.



Dipper attachment for tractor-mounted excavator. Clamshell, dragline and crane features also are available

Portable Gravel Plant

UNIVERSAL ENGINEERING CORP., Cedar Rapids, Iowa, has developed a portable gravel crusher designed to meet a demand for a moderately priced gravel plant for use in processing material for secondary road construction. It consists of a 10- x 24-in. roller bearing crusher, a 2- x 6-ft. single deck vibrating screen, 18-in. feed and delivery conveyors, and a diesel motor with V-belt drive. The component parts of the plant are mounted on a rubber-tired chassis, and the crusher can be adjusted so that almost 100 percent of the crushed material will pass a 1-in. sq. opening, the manufacturer states. Capacity of the unit is 1 ton per min., and only one man is needed to operate it.

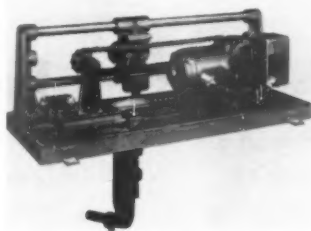
Automatic Samplers

HARDINGE CO., INC., York, Penn., has secured manufacturing and sales rights to an automatic sampler for continuous processes to be marketed as the "Hardinge Automatic Sampler." The unit takes periodic "cuts," or samples, from a stream of moving material, either wet or dry, at any stage in a continuous process, and is said to be particularly adapted to the mining and rock products industries. It is entirely automatic and can be set to operate periodically at a variety of time intervals from 5 to 60 min. When activated by a time switch, the sample cutter moves horizontally at a constant speed across the stream of moving material, diverting a representative sample into a sampling launder or container; and cutter movement is controlled to avoid stroke speed and length variation during each cutting operation. In the illustration the cutter is shown with cover removed and the wet cutter can be seen attached underneath. The reciprocating cutter carriage is driven by an extended pin on the chain. In the model shown, the vertical cutter-



Portable crushing plant for processing material for secondary road construction

support bar moves horizontally along the rubber-shuttered slot in the sampler base; the material being sam-



Automatic sampler with cover removed

pled flows toward the observer, beneath the sampler base. The open face of the cutter, through which the sample enters, is away from the observer in this view.

All-electric Shovel

MARION POWER SHOVEL CO., Marion, Ohio, has introduced the 93-M Ward-Leonard all-electric shovel which carries a 2½-cu. yd. dipper and 28-ft. boom as standard equipment. It is being presented as a "sister" shovel of the 93-M diesel machine. In the new unit, which has all motions electrically controlled, the swing machinery is powered by a separate vertical motor, direct geared through two intermediate shafts to the main swing shaft, which is mounted on the upper frame structure. The hoist machinery is powered by a separate motor, first through a silent chain reduction to the intermediate shaft, and then through a single gear reduction to the drum shaft. A separate motor direct geared through an intermediate shaft to the shipper shaft supplies power for the crowd machinery.

The motor generator set on the new model consists of an induction driving motor direct-connected to three direct current generators in line, and an exciter, all mounted on a self-supporting base. Each generator is of the Ward-Leonard type designed for variable voltage control. The motors themselves are mill type, 600-line, shunt wound, 230-volt, direct current, and possess low armature inertia and high overload capacity, the manufacturer states.

Other shovel features listed include: simplicity of machinery design and construction for easy maintenance and adjustment; welded upper and lower frames for maximum strength and rigidity without bulky weight; permanently positioned axle and shaft bearing supports for positive alignment; moving parts fitted to close tolerances for smooth operation and long life; conveniently arranged and simply designed operating control equipment; and all-welded box section boom.



All-electrically controlled shovel with 2½-cu. yd. dipper and 28-ft. boom

Manufactured Sand



Some of the 14 wagon drills available at the quarry. Note lights, top, for night operation. Power shovel loading soft stone that is wasted

Sand and Aggregate From Granite

Rod mill, hydroseparator and classifier used in plant manufacturing sand for Clark Hill dam construction. Two surge piles in plant flow assure smoothness of operation

CONSTRUCTION of Clark Hill dam on the Savannah river by the All-states Constructors, Inc., should be of special interest to producers of aggregates. There, a new pattern is being set in the production of crushed granite aggregates, with particular emphasis on the production, or "manu-

By WALTER B. LENHART

facture," of sand from crushed granite screenings.

More details regarding the specifications for sand and how they are being

met may be considered later, but here only the high points will be touched upon. The fineness modulus for the manufactured sand was originally set at 2.7 to 2.9, but at time of inspection the F.M. of the delivered product was in the 3.3 range although it was said at that time that changes in the specifications were pending. The reason for producing sand coarser than specifications quoted was due to degradation of the coarser sand in the mixing plant. At the outset of the quarry operations, it was found that the top portion of the granite quarry was softer than the rock below. Now this top rock is being stripped off and discarded.

The Clark Hill dam on the Savannah river is about 25 mi. up stream from Augusta, Ga., and was approved under the Flood Control Act of 1944. When completed it will be one of the largest dams in the South and will have a total length of over one mile, or 5680 ft. The concrete section will be 2282 ft. long and the spillway will be 1096 ft. in length. Approximately 1,050,000 cu. yd. of concrete and 3,300,000 cu. yd. of compacted earth fill will be used. The concrete sections will



Left, background is batching plant, served with aggregate and sand by inclined conveyor from crushing and screening plant, right. Building, foreground, is company office

MANUFACTURED SAND

be 200 ft. above the river bed and the maximum height of the earth fills will be 155 ft.

The ultimate power generating section will have seven units with the capacity of the turbines at 136-ft. head at 55,000 hp. each, and the capacity of the generators is 40,000 kw. The total yearly ultimate output of electrical energy will be 703,000,000 kw.h.

The dam will provide a reservoir 37 miles in length and it will have a shore line of 1200 miles with water storage for 2,900,000 acre ft. The area of the pool at full flood will be 78,500 acres.

The dam, besides providing for flood control and power development, will control the waters of the Savannah river for better navigation and add to the recreational facilities of the area.

The primary end of the crushed stone plant has a capacity of 450 t.p.h. of which 98 t.p.h. is calculated to go to the sand plant. Similar to many other construction jobs of the United States Army, Corps of Engineers, there are four sizes of coarse aggregates and these are 6 in. to 3 in.; 3 in. to 1½ in.; 1½ in. to ¾ in. and ¾ in. to No. 4. These are all stockpiled in outside storage piles with stone ladders at each pile to reduce to a minimum breakage of the sized stone as it falls to each of the four piles. The two top sizes of coarse aggregate are produced at a calculated rate of 58 t.p.h. and the two finer sizes at 48 t.p.h., with the difference being held in two surge piles; one surge pile following the primary scalping section and one surge pile ahead of the Marcy rod mill installation. The material going to the rod mill from this surge pile was originally intended to be the minus No. 4 material but provisions have been made so that ¾-in. and even some of the 1½-in. crushed rock can be bled onto the stacker belt serving this large surge pile. The storage piles of finished materials each have a live capacity of 5700 tons, and the four sand piles total 22,000 tons of capacity. Under the first surge pile a No. 5 heavy-duty Jeffrey vibrating feeder is in use and under the pile serving the rod mill a second feeder of the same make is being used, but it is of smaller capacity (No. 4). A long reclaiming tunnel of steel construction passes under the piles of finished material and the crushed stone and sand are drawn to a reclaiming belt by drop-type, gravity feed gates. The belt serves a rinsing screen ahead of the concrete mixing plant.

There are four sand storage piles. One is being built up, one being drawn from, and the other two are draining. Thus the sand drains at least 72 hr. before it is used. The sand goes to these piles via a main inclined, 24-in. belt that discharges to a cross, 24-in. shuttle belt.

On each side of the 8-ft. dia., steel,



Backhoe used for stripping on top section of quarry

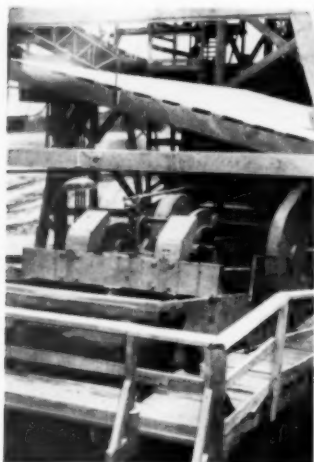


Power shovel loading quarry-run stone to 11-cu. yd. dump trucks



This 8- x 12-ft. rod mill is fed at both ends and discharges through ports in the periphery of the drum. Rods are fed into the mill by unscrewing large diameter cap that is part of the feed chute

MANUFACTURED SAND



Classifier with special dewatering flights

bolted construction reclaiming tunnel has been placed a line of 8-in. drain tile so that water from the sand eventually drains out around the main tunnel and into these pipes. That way very little water seeps into the reclaiming tunnel proper.

Sand going to the piles is sampled twice per day. Each time a sample weighing in the 20- to 25-lb. range is scooped from the main belt and sent to the laboratory for screen analysis.

A long 24-in. inclined belt reclaims the material in the surge pile ahead of the sand manufacturing plant and delivers it to two Tyrock (W. S. Tyler Co.) vibrating screens. These screens are double deck, wet, and are 5 x 12 ft. The top deck is made up of three sections of 7/32-in. by 3-in. slotted wire. The top section of the lower decks has been left out and the two lower sections are of 5/64-in. slotted wire. The throughs from all sections go to a Dorr 16-ft. dia. bowl hydroseparator that operates with a heavy



Primary crusher, a 42-in. gyratory. Note flat hook for dislodging oversize stone

duty 8- x 34-ft., 6-in. Dorreo duplex rake de-waterer or classifier. The unit is a Type DSF x B. At the lower end of the screens a damper or flipper gate is provided so that oversize from the lower deck of the vibrating screens can be sent to the hydroseparator, or to the rod mill. All the oversize from the top deck goes to the rod mill.

Rod Mill Operation

The rod mill is an 8- x 12-ft. unit, and was supplied by the Mine and Smelter Supply Co. of Denver, Colo. The mill is fed at both ends by gravity through suitable spouts and discharge is through ports in the center periphery of the mill. The rod mill is driven by a 350-hp. G. E. motor through "V" belts.

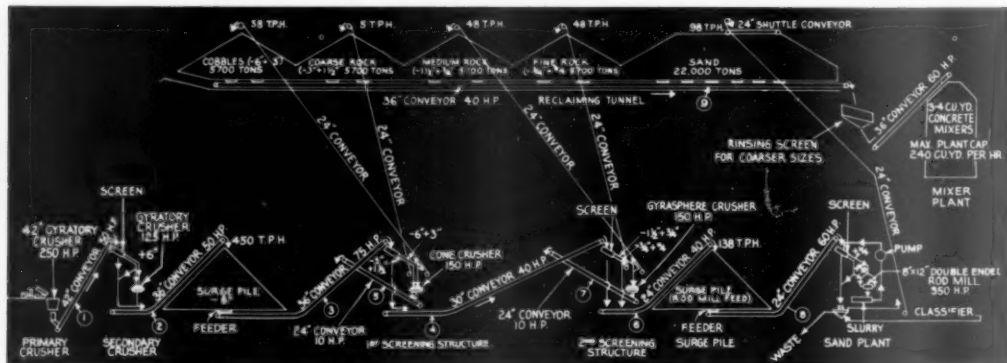
At the outset, the rod mill was loaded with 44 tons of grinding rods but these were gradually pulled out until about 15 tons were in the mill; then some were replaced so at time of inspection there was an estimated 18 to 20 tons of rods in the mill. At the start, 2-in., 2 1/2-in., and 3-in. dia. rods were placed in the mill and wear of rods is compensated for by the addi-



H. F. Shealy, U. S. Army Engineer Corps, at one of the weighing hoppers in the batching plant

tion of some of the previously used rods. No data is available on rod or liner wear. C. M. Patterson, in charge of the rod mill section, said that he could deliver an F.M. from 2.7 to 3.4 without trouble. A constant rate of feed seemed to be the prime requirement for a uniform product. As there is practically no pulp line in this type of mill, coarser discharge could be obtained by simply force feeding the unit. This also gave a greater capacity, which seemed to be desirable. The operator estimated that about 50 percent of the feed to the screens went into the rod mill. The material discharging from the rod mill at time of inspection was mostly all in the minus 10-mesh range with practically no oversize. A dilute pulp was being used although it was stated that a thicker pulp did not give much additional fines. A model CB Willey pump delivers the rod mill discharge back to the Tyrock screens.

The 16-ft. bowl of the hydrosepara-



Diagrammatic flow-sheet of crushing and screening plant for Clark Mill dam construction.

MANUFACTURED SAND

tor has sufficient turbulence so that only a small amount of excess fines in the sand is wasted. The underflow passes to the duplex rake section of the Dorreo classifier and this unit has special de-watering flights on the upper end of the rakes. The upper ends are about 3 ft. shorter than the conventional rake on this type of unit, and the end rake is a large, perforated plate which, in action, enables a considerable load of sand to remain at the high end of the rakes. This, in turn, means more time for the water in the sand to drain back to the pool before the sand is pushed and dumped to the off-bearing belt. The fines from the rinsing screen ahead of the mixing plant are sent to the hydroseparator by a Wilfley pump.

The plant uses belt conveyors throughout and they are assembled in a straight line [as far as production is concerned], with stacker belts extending at approximately right angles to the long axis of the plant. There is a total of 4400 ft. of belt conveyors on a center to center basis and they range from 42 in. to 24 in. in width. All of the belts are of Goodyear manufacture. Most of the conveyors were supplied by Barber-Greene Co. Due to the



Hydroseparator with 16-ft. bowl. Underflow passes to the duplex rake section of the classifier

extent to which belts are used, the plant from the quarry end to the batching plant is about one mile long. All screening is dry except at the sand plant. The plant was designed under the direction of C. D. Riddle, project manager and chief engineer for the Walsh Construction Co., one of the prime contractors.

Conveyor belt width, and hp. of each in the order of their use is:

No. 1—42 in.	50 hp.
No. 2—36 in.	50 hp.
No. 3—36 in.	75 hp.
No. 4—24 in. return belt	10 hp.
No. 5—30 in.	40 hp.
No. 6—24 in.	10 hp.
No. 7—24 in.	10 hp.
No. 8—24 in.	10 hp.
No. 9-13 Convey to stockpiles	all 10 hp.
No. 14 Horizontal reclaiming belt,	40 hp.
36 in.	
No. 15 Inclined reclaiming belt,	60 hp.
36 in.	

(Continued on page 84)



Trucks dump quarry-run stone to primary crusher from both sides at once, left, and pictured to right is surge pile built up between primary and secondary crushing and screening sections of plant



Inclined belt, background, builds up surge pile ahead of rod mill that produces manufactured sand, left. Right: At this operation there are four piles of sand: one being built, two draining and one in use (this allows 72-hr. draining time). Note aggregate ladders, background, used for building stock of sand: one being built, two draining and one in use (this allows 72-hr. draining time). Note aggregate ladders, background

Modern Gypsum Processing Plant

National Gypsum Co. has practically rebuilt Savannah plant, installing advanced material handling methods for high production and quality control

THERE WAS A TIME, not too many years ago, when a new company could enter the gypsum processing field with a rather limited capital, but today, due to the exacting demands of the trade which knows and wants a reliable, consistent, and high quality material, the capital requirements are large and run often into several million dollars. High and efficient production must be maintained at all times, and every step in the processing must be closely supervised and a high degree of chemical and technological skill is required to run the large plants that are now necessary to carry out an economically sound business.

As to just what the requirements are to deliver a high quality material, at low costs, and a material that also must be uniform in quality, one can turn to the practically new plant of National Gypsum Co. at Savannah, Ga. This plant has been one of the main producing units of the company for many years, but in 1946-47 it came in for an overhaul that gives it the appearance and aspect of a new plant. The work was completed in July, 1947. This was another of the moderniza-

By WALTER B. LENHART

tion steps that National Gypsum Co. carried out as a part of a broad, general plan, that has been executed under the direction of Melvin H. Baker, president of the company, whose head offices are in the National Gypsum Co. building, Buffalo, N. Y. (See *ROCK PRODUCTS*, March, 1948 p. 84, for a description of the company's new gypsum and wallboard plant at Baltimore, Md.) The Savannah plant, in many respects, might be called a companion plant of the Baltimore operation. (Also see *ROCK PRODUCTS*, December, 1947, for an account of the ultra-modern lime processing plant of the company at Kimballton, Va.) The company has other gypsum processing and wallboard plants in the Bronx, New York, Clarence Center, N. Y., National City, Mich., Fort Dodge, Iowa, Rotan, Texas, Medicine Lodge, Kan., and at Portsmouth, N. H., as well as many other diversified production operations related to the building and con-

struction industries where there is emphasis on the needs of the company's plants as illustrated by the fact that the company produces all the paper that is used in the production of the well known "Gold Bond" wallboard and gypsum lath.

Those plants that border on the Atlantic Coast receive their raw materials from three quarries, company-owned, that are located in Nova Scotia. At the quarries the rock is all crushed to about minus 4 in. and an important step there is a preliminary washing of the rock so as to remove impurities before shipping. The company has three ocean going boats, each carrying a pay-load of 10,000 tons of crushed gypsum. The boats are the "Cheticamp," "Dingwall" and "Walton," and are all named after the three quarries previously mentioned.

Deliveries of rock start about June 1 and continue to about November 15, when sea going traffic in the Nova Scotia area ends because of severe winter climatic conditions. This seasonal delivery of raw material means that the company must, at all the coastal plants, maintain large stockpiles to carry through the year. The stockpile at the Savannah plant has a capacity of 190,000 tons of gypsum rock, and differs from the Baltimore stockpile in that it is all outside storage.

The Savannah plant is located in the northern section of the city on Brampton Road. The dock parallels the Savannah river which is at that point a part of the Savannah harbor. It is served by the Savannah and Atlantic Railroad. Adjacent to the plant a \$20,000,000 port expansion program is soon to be carried out by port authorities. The company has a considerable area of ground providing ample room for further expansion, should it become desirable. The general area is flat.

Dock and Storage Conveyor Facilities

The boats on arrival at the dock are unloaded to a conveyor system by a 2½-cu. yd. Mead Morrison clamshell rig. Some drag scraping is done in the hold of the boat to bring the rock under the hatches so the clamshell can get it with a relatively small amount of final cleanup of the holds being done by hand labor.



One of two clamshell rigs that reclaim minus 4-in. material from the stockpile which has a capacity of about 190,000 ton

The crane mounted on the dock has a main horizontal member that extends out over the boat and carries the unloading clamshell. This horizontal member can be raised to permit movement of the boat should such be desirable. The unloading bucket dumps to a receiving hopper over a 30-in. belt conveyor that parallels the wharf. This belt has a capacity of 400 t.p.h. and discharges to another 30-in. cross belt conveyor that passes under a paved roadway. This tunnel belt dumps in turn to a long, 30-in. belt conveyor that parallels the outside stockpile. This belt serves two important purposes: (1) it conveys the rock to a portable Robins stacker that has an elevated boom on which is mounted another belt conveyor. When this boom is extended over the stockpile, the belt and its stacker build up the stockpile, and (2) the same belt and the same stacker are an integral part of the reclaiming set-up. In the latter event, the rock is fed to a portable Robins field hopper that straddles the belt. This hopper is mounted on widely spaced industrial rails so that it can be moved anywhere along the long, main conveyor belt above referred to. The hopper is fed by either a Lorain or a Northwest, 1-cu. yd. clamshell rig augmented by an Allis-Chalmers tractor and dozer that pushes material down to the clamshells. The portable field hopper holds about 20 cu. yd. and has a small apron pan feeder in its bottom that delivers the rock evenly and uniformly to the long reclaiming belt.

When reclaiming rock, the boom of the previously mentioned Robins stacker is swung around in an arc of approximately 180 deg. and the boom belt now dumps to one of three stationary hoppers mounted over an elevated 24-in. belt conveyor that travels in a reverse direction to the main



Stacker and/or reclaiming unit. In the position shown, the unit is delivering rock from storage to elevated belt conveyor serving the plant

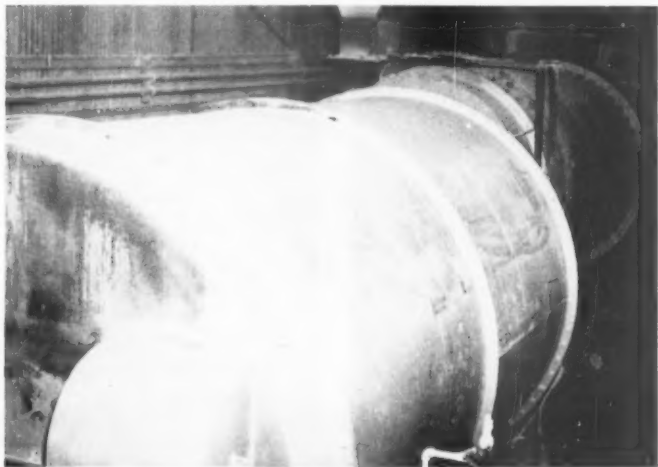
30-in. belt and delivers the rock into the plant proper. The two portable units here, namely the stacker reclaiming and the field hopper, are both moved on their industrial rails by electric power. The stacker reclaiming is much the larger unit and gives one the impression of a rugged, serviceable, long-lived piece of equipment. Reclaiming is normally carried out at the rate of 50 t.p.h.

Drying and Pre-drying Facilities

The rock belt delivering to the plant is elevated upward somewhat at its discharge end so the material can conveniently dump to a 4- x 10-ft.,

single deck, dry, Simplicity vibrating screen that carries 2½-in. wire mesh. Before the rock passes to this screen any tramp iron or other magnetic material is removed by a stationary Stearns magnet that is suspended over the head end of the belt conveyor. The company has two of these units in the pre-calcining section of the mill. The undersize goes to a two-compartment parabolic steel bin that has a total capacity of 500 tons, via a short, inclined belt conveyor. The plus size falls to a 50-ton capacity bin under which is mounted a Link Belt, 48-in. heavy duty, apron feeder that has a capacity of 135 t.p.h. This serves an 18- x 36-in. Pennsylvania single roll crusher that is set to deliver a 2½-in. product and the unit has a rated capacity of 100 t.p.h. The single roll crusher discharges to a super capacity, Link Belt bucket elevator. These are large, slow-moving units with plenty of capacity and the design of the buckets is such that they dump at slow speeds without back spill of any importance. They have three of this type elevator in the plant and this one is enclosed in a 33- x 54-in. steel housing. The first elevator dumps to a short belt conveyor which transfers material to the same 500-ton, two-compartment bin above referred to.

The rock in this bin, via four feeders, is delivered to an 18-in. belt conveyor that serves the 8-ft., 8-in. x 70-ft., Hardinge rotary dryer. This is an oil-fired unit and has a capacity of 70 t.p.h. of dry rock. Ahead of the rotary section of the dryer is a large diameter combustion chamber that is provided with a Todd oil burner. Temperature control of the dryer is through a Bailey recording thermometer. The dry rock is discharged to



Combustion chamber, foreground, and rotary section, background, of 70-ft. dryer



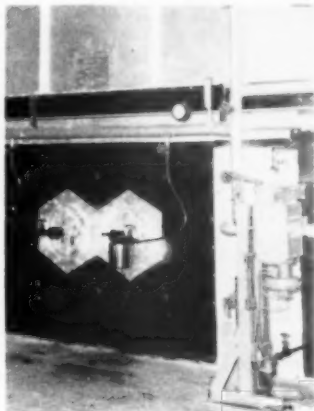
Cut-off knife with punch behind it. Punch is near the forming end of the belt but only a few feet away from the knife

another of the super-capacity bucket elevators. The dryer is equipped with a Buell dust collector, size 9½ A2, that discharges to a 12-in. screw conveyor for delivering the material into the super capacity bucket elevator.

The bucket elevator following the dryer serves a Pennsylvania Trojan, reversible hammermill that has a capacity of 70 t.p.h. and is set to deliver a minus 10-mesh product. The bucket elevator discharges to a 16-in. screw conveyor that serves a 14-ft. Raymond air separator, which has a capacity of 60 t.p.h. The flow of raw, ground gypsum rock at this point is through a rather complicated series of screw conveyors that serve the land plaster, coarse land plaster and other raw bins.

Bins or Silos

The calcining and sacking section of the plant can be divided into two general sections. At the end nearest the dock are the kettles, Raymond mills, and the necessary storage bins or silos



One of two oil-fired boilers in the steam plant

related to these operations. Then extending onward in practically a straight line are the F. L. Smidth tube mills for regrinding the calcined material (stucco), sacking machines and store room for paper bags, fiber, expanded metal lath, etc. All of this equipment and the previously described dryers, etc., are under one general roof plan with the housing structure all of ample dimension and of steel and concrete construction throughout.

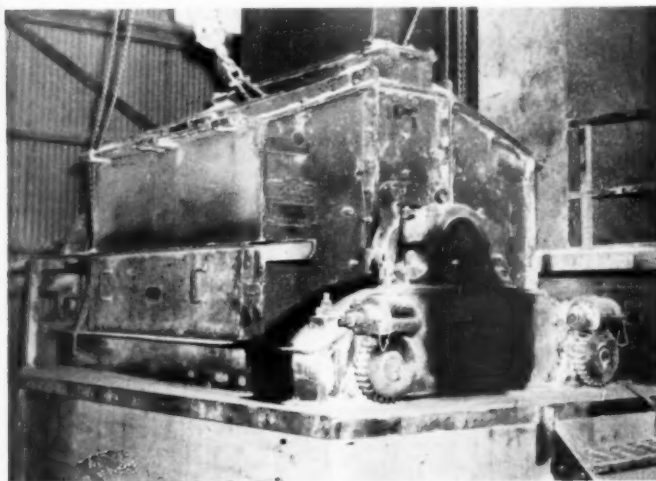
The bins for storage of many of the intermediate products (land plaster, stucco, etc.) are rather unusual for they are steel cylindrical silos that rest at ground elevations. On the raw side there are ten of these silos each holding 170 tons of material and for the stuccos (gauging, airidized stucco for tubing, etc.) there are six more



Drag feeder with cover removed that reclaims ground material from bins or silos, transferring it to screw conveyors

of these silos that hold from 120 to 160 tons each. For the tubed stucco there are two more similar bins of 200-ton capacity each that are augmented by two parabolic bins that have a capacity of 120 tons additional. Again, in the wallboard plant there are two, 170 ton capacity silos for stucco. These silos or bins are filled by the previously mentioned system of screw conveyors and bucket elevators.

All of these silos are emptied in a similar manner. Each is equipped with a duplicate set of Link Belt drag chains that can operate independently of each other. The top half of the drag-chain system is in and near the bottom of the silo and moves in a horizontal position. The chain cross sections are of ample size so that sufficient capacity is maintained. These devices are a simple, fool-proof method of unloading a bin containing fine material that would otherwise tend to arch or flood. The chain feeders also deliver a uniform tonnage.



Reversible hammer mill that reduces rock to minus 10 mesh. There is a single-roll crusher ahead of this mill in plant flow



Locomotive used to switch cars in yard



Stationary magnet over belt conveyor ahead of the vibrating screen. Both the two mentioned units assure clean material going to the single-roll crusher

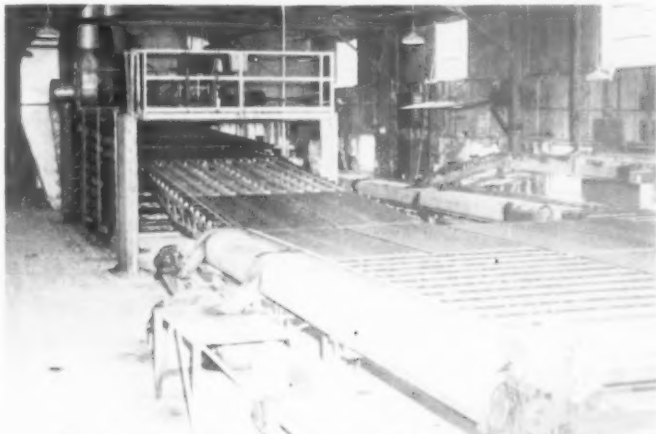
Kettles and Mills

There are four J. B. Ehrsam & Sons kettles, each fed by a 30-ton capacity feed bin and each provided with a 20-ton capacity hot pit. These are 10 ft. dia. x 12 ft., 6 in. high, provided with extension tops and deliver 15½ tons per cycle. The kettle-feeding grind is held at 87 percent minus 100-mesh and calcining is conducted on 2 hr. cycles. The kettles are oil-fired by individual burners and have pressed steel bottoms and the usual stirring or rabble mechanism and recording pyrometers so that uniform calcining conditions are maintained.

For preparing the kettle feed material there are four, low side Raymond mills that have a capacity of



One of the tube mills used for re-grinding plasters to be sacked



Green boards on transfer table awaiting their turn to go up the tippie into the dryer

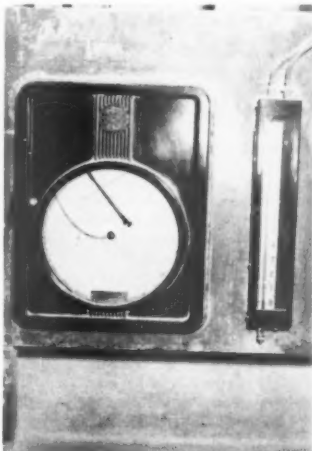
7 t.p.h., each. These are equipped with Raymond fan exhausters and dust collecting system that usually accompany similar equipment.

Land plaster or agricultural gypsum is an important item at the Savannah plant, especially for the peanut growers in the South. For grinding land plaster there is a fifth low side mill that has a capacity of 7 t.p.h.

All stucco for the many types of plaster manufactured here is reground in two F. L. Smidth tube mills. The larger unit is 7 ft. x 23 ft., 9 in., and has a capacity of 12 t.p.h. The second tube mill is 5 ft., 6 in. dia. x 20 ft. long and has a capacity of 3½ t.p.h.

Sacking and Mixing

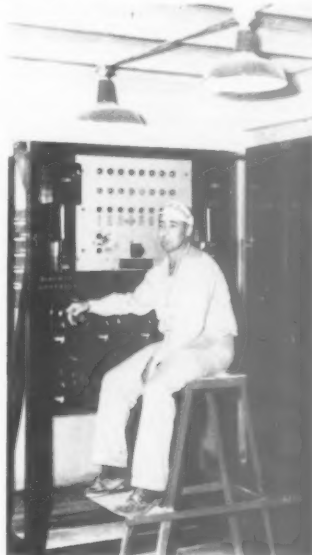
There are two, 4-tube St. Regis packers and one 3-tube packer. The latter is used for specialties. One ton



Recording thermometer used in conjunction with the dryer

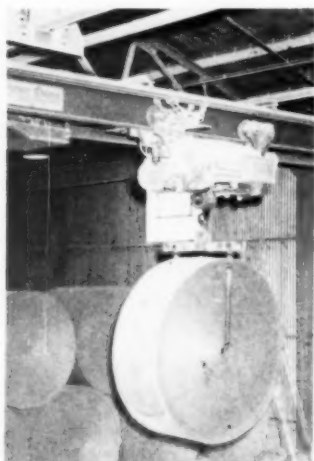
Broughton mixers are used for the fibered hardwall and other mixed plasters. All materials are mixed a uniform time with usually two men at the weighing hoppers. Picked fiber is added direct to the mixers. Retarder for control of the setting time arrives at the plant in paper bags and this material is re-mixed in a separate mixer so that a more uniform end product is obtained. This mixer holds twenty sacks of retarder. Cars in and about the yard are spotted at the loading doors by a Plymouth locomotive.

The wallboard plant is housed in a separate structure of its own that is

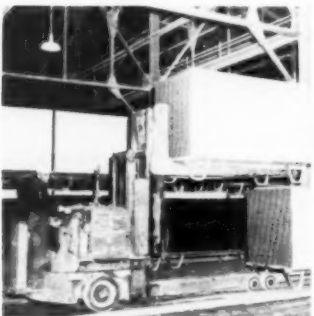


Operator at the control board in the wallboard plant

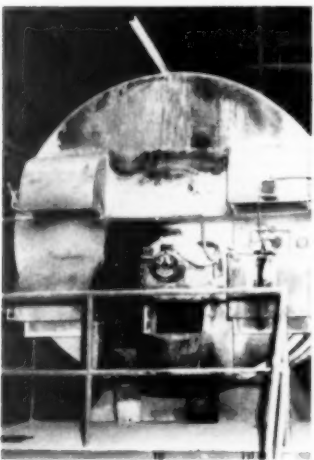
GYPSUM



Electric crane handling rolls of paper in the company's store room



Lift-truck handling finished "Gold Bond" wallboard on pallets



Oil burner firing the 70-ft. rotary dryer

of steel and concrete construction. This building parallels the mill building with the railroad trackage between the two main buildings for convenient car loading. At one end of the structure (nearest the dock) is a large storage warehouse, having facilities for finished "Gold Bond" wallboard, rolls of paper used in its manufacture and other related supplies. The rolls of paper for the board plant are delivered to an elevated platform by a Conco electric crane, after which the paper is rolled to the spindles on the wallboard machine.

The wallboard machine from the mud mixer to the punch at the finish end was designed and built by the engineers of the National Gypsum Co. The belt section is about 600 ft. long and is approximately half flat belt and half live rolls. All the carrier rolls are of bronze and are equipped with roller bearings. The punch was supplied by J. B. Ehrsam & Sons as was the cut-off knife that immediately follows the punch. This knife cuts the board very accurately to any predetermined lengths.

After passing under the cut-off knife the green board goes to a wide transfer belt that delivers to the automatic elevator serving the Coe dryer. The dryer is an 8-deck unit and is one of the dominant features of this large plant. The automatic elevator or tippie feeds the green board to any of the eight decks and functions without attention. At the discharge end of the dryer is an automatic unloader. The dry board then pass to bundling machines that were company designed and the finished board stored on pallets until shipped. Steam for the dryers is produced by two oil fired, Combustion Engineering Co. boilers.

Personnel

Officers and personnel of the National Gypsum Co. are: Melvin H. Baker, president; L. R. Sanderson, vice-president in charge of production; D. E. Crandell, vice-president in charge of sales; J. C. Best, vice-president in charge of industrial sales; F. A. Manske, general production manager; E. B. Hollingsworth, assistant production manager; J. J. Burns, manager of the Savannah plant; A. C. Olsen, mill superintendent; Jerome White, board plant superintendent; R. Curry, master mechanic; J. C. Brewer, office manager; D. L. Cramer, quality supervisor; W. A. Davis, personnel and safety; R. Earl, dock foreman; R. B. Carter, loading foreman, mill section; L. M. Douglas, assistant loading foreman, mill section; Oral Deloach, foreman, wallboard plant; E. J. Cronk, foreman, wallboard plant; H. L. Weinheimer, foreman, wallboard plant; Sam Young, loading foreman, wallboard section; and W. M. Mathews, boiler plant supervisor.

Storage Conditions and Expansion of Mortar

IN A TEST to determine the effect of storage conditions on expansion and tensile strength changes of mortar, mortar bars, made from cement and reactive aggregate, were stored at room temperature under the following conditions: (a) in dry air, (dry air is a term used here in contrast with moist air. It refers to storage in an atmosphere above calcium ($\text{CaCl}_2 \cdot \text{CaCl}_2 \cdot \text{H}_2\text{O}$) and having a water vapor pressure less than 1mm. Hg at 25 deg. C), (b) in moist air, (c) in 1 percent sodium hydroxide solution, and (d) in water.

Mortars did not expand significantly when stored in dry air. When stored in water they expanded very slowly, but when stored in moist air or 1 percent sodium hydroxide solution they expanded rapidly. Unexpanded mortars taken from dry air and expanded test bars that had been stored initially in moist air expanded rapidly for a short time on being changed to water or 1 percent sodium hydroxide solution, after which their expansion rates decreased. Mortar which had expanded in 1 percent sodium hydroxide solution contracted slightly when changed to moist air but later expanded rapidly. Bars initially stored in water expanded excessively when changed to 1 percent sodium hydroxide solution. Mortar bars stored initially in moist air, 1 percent sodium hydroxide solution, or in water, showed reduced expansion rates when changed to dry air.

Conclusions are: absorption of water by reacting opal particles caused mortar expansion. Removal of uncombined mixing water from mortar inhibited expansion. Cracks, associated with reacted opal particles, were observed in mortars stored under all conditions used. Cracks reduced the tensile strength of all reactive aggregate mortars.

This information was taken from Highway Research Abstracts, February, 1949.

1948 Lime Shipments

BUREAU OF MINES, in a preliminary tentative report on 1948 lime shipments, states that total lime shipments, including quick and hydrated lime and dead-burned dolomite, for 1948 amounted to 7,280,000 short tons, 5,450,000 of which represent quicklime and 1,830,000 of which represent hydrate. This is an all-time record year for lime shipments, exceeding the previous record year, 1947, with 6,778,979 short tons shipped. In contrast, the peak war year for lime production was 1943 when 5,596,000 tons were shipped. Total value of lime products in 1948 increased 14 percent. Total sale of lime for finish coat increased 18 percent over 1947.

Large Capacity per Man-Hour

Belt conveyors used throughout for intra-plant material-handling as well as stockpiling finished product at new sand and gravel plant of Inland Aggregates Co., Inc., Niles, Calif.

MANY NEW sand and gravel plants have been started recently on the Pacific Coast. A goodly portion of these plants were built by old established companies. One of the newer companies to set up a plant in that area, however, is Inland Aggregates Co., Inc. whose operation is near Niles, Calif. This productive sand and gravel area is well known to many readers of *ROCK PRODUCTS* and is some 25 miles southerly from Oakland, Calif., and serves Oakland, Alameda, Berkeley, San Francisco, San Mateo and the many smaller cities around the San Francisco Bay area. The president of the company, Robert B. Soldini, is no novice at the sand and gravel business and has interests of a similar nature elsewhere in California.

The plant was designed and built by the Bodinson Manufacturing Co. of San Francisco and uses belt conveyors throughout for the transportation and intraplant handling of the materials. The plant is well designed, very efficient, operates with a minimum of man-power and has a capacity of 150 tons of washed sand and gravel per hour. The plant is designed so that the single operator can see and control all the various operations from an elevated and partially enclosed platform.

Gravel in the Niles area is relatively small in size, except in sections close to the drainage systems that come out of the nearby foothills where it generally is larger. The selection of a good site for a gravel pit can be influenced by gravel sizes available and by clay seams that may be present in the area. The Inland Aggregates Co., Inc., has leased 300 acres of well located, acreage from the California Nursery Co., and on Sept. 1 of last year the new plant went into production. The plant is designed primarily for truck loading although the rails of the Western Pacific Railroad are nearby and the company has a loading ramp suitable for car loading.

The gravel deposit being worked is about 30-ft. thick with available gravel 90 ft. below and with 18 to 30 in. of soil overburden. The gravel is well rounded and some sorting action has been accomplished during its placement in the deposit. Water table here is at the 60- to 95-ft. horizon. At the 30-ft. horizon some clay is encountered in a thin strata and it is ex-

pected that at the depths in the 60-ft. range, the gravel will be larger in size. The pit as now opened up is running about 45 percent sand. The plant is about two miles north of Niles and very close to the new Centerville plant of Pacific Coast Aggregates Co.

Four sizes of material are produced with no separation of the crushed and uncrushed portions as the former is very small in amount. The top sizes of material produced are $1\frac{1}{4}$ in., $\frac{3}{4}$ in., $\frac{1}{4}$ in. (pea gravel) and sand. These are stocked by 18-in. inclined



Haulage unit being loaded with finished material. Overhead bin is only used to hold material for a specific truck and not storage.



A $4\frac{1}{2}$ -cu. yd. front-dump haulage unit being loaded by a $3\frac{1}{2}$ -cu. yd. power shovel in the gravel pit



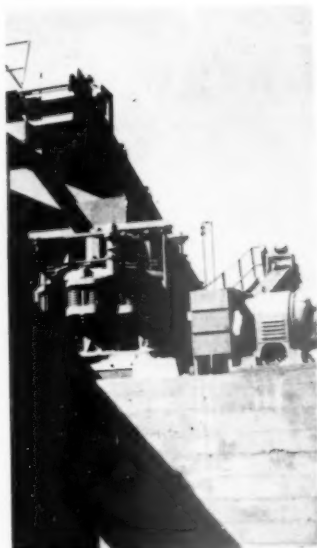
Conveyors at left handle materials to and in the plant while those at right are stacker belts. Most conveyors in this plant are powered by geared-in-head motors

conveyor belts that finger out over the reclaiming tunnel. The tunnel is rather unique in that it was constructed using the Guniting process. The concrete tunnel is 240 ft. long, 7 ft. high, and 5 ft. wide, and with a 24-in. reclaiming belt operating in it. The belt is served by 13 gravity type gates, i.e. the flow of material is on the belt when the lip of the feeders is lowered. All gates are remote-controlled by means of hand levers and $\frac{1}{4}$ -in. dia. steel cables. Loading of all materials is done by a single operator. The reclaiming belt emerges from the tunnel and elevates the material to a 4-compartment hopper. This hopper is not intended as a storage bin and only is intended to handle the overage from a truck loading cycle. The 13 handles serving the 13 gates are grouped so that four han-

dles serve the four gates under the sand storage pile. For convenience the sand gate handles are painted red. Three white painted handles are for the pea gravel, three yellow handles for the $\frac{3}{4}$ -in. and three black handles for the $1\frac{1}{4}$ -in. size. At the loading point two hand winches operate the swivelled spout above the 4-compartment loading hopper and each of the hoppers has a quadrant-type discharge gate.

The sand from the lower deck of the final screens goes to two 30-in. Bodinson sand drags. These discharge onto the stacker belt and the outboard end of this conveyor has a swivelled spout so that in practice, four piles of sand are built up. While one pile is being drawn from, the other three are draining. In addition, the opening over the sand gates is extended up vertically about 12 in. so that any water draining out of the sand will not get into the tunnel or onto the reclaiming belt. An International tractor and dozer is available for pushing any of the aggregates over the reclaiming gates.

The material in the pit is loaded by a $\frac{3}{4}$ -cu. yd. P. and H. shovel. This loads to a $4\frac{1}{4}$ -cu. yd. Case front dump haulage unit. The company has two of these in service. The dumping unit unloads, after a relatively short haul, to a 14-cu. yd. hopper that is provided with an 8-in. spaced rail grizzly. The hopper feeds the pit-run material to a 24-in. inclined belt via a Bodinson reciprocating pan feeder. The belt delivers to a 10- x 20-in. Pacific jaw crusher that was made in Los Angeles by the Alloys Steel and Metals Co. It is driven by a 20-hp. asbestos-protected U. S. Motor. The jaw crusher discharges to another inclined belt that serves a 4- x 8-ft. dry, single-decked, Bodinson vibrating screen with the oversize (plus $1\frac{1}{4}$ -in.) falling to a 3-ft. Symons cone crusher. This crusher is powered by another asbes-



Asbestos protected motor, 60 hp., drives 3-ft. secondary cone crusher

tos-protected U. S. Motor, 60-hp. The crushed product is returned to the scalper screen by an inclined conveyor. Final sizing is done on two Bodinson screens that are placed back to back. Both operate wet with the top screen being a 4- x 10-ft. double-deck unit. The lower screen is the same size as the upper screen but has only a single deck. These screens have $\frac{3}{4}$ -in., $\frac{1}{4}$ -in. and $\frac{1}{8}$ -in. mesh respectively. The three sizes of rock pass to their respective stacker belts. The stacker



Primary crusher, a 10- x 20-in. jaw, for handling over-size gravel



One of 13 gates in reclaiming tunnel that are controlled from truck-loading point



Vertical pump of 600-g.p.m. capacity powered by a 30-hp. motor. The booster pump is powered by a 15-hp. motor

belts are all driven by U. S. Electrical Motors, Inc., Syncrogear motors. These are light, compact, weatherproof geared-in-the-head motors and do away with excessive belting and at the same time can operate without covers in any type of weather. The belts on the conveyor systems were supplied by Quaker Rubber Corp. and the American Rubber Manufacturing Co.

Water is secured from a deep-well Byron Jackson pump that delivers normally 600 g.p.m. It is powered by a 30-hp. U. S. vertical motor. This pump is augmented by a booster pump that uses a 15-hp. Louis Allis motor.

The offices of the company are located at the plant where Mr. Soldini makes his headquarters. J. Bravo is in charge of the office; E. L. Knox is plant superintendent; and N. B. Lenahan, sales manager. All aggregates are sold on a weight basis with the materials being weighed at the office on a set of Fairbanks Morse truck scales.

Merchandising Policies

IN EXECUTIVE LETTER No. 474 to the industry, National Ready Mixed Concrete Association described results of a conference to decide what the association could do, with the help of W. D. M. Allan, Portland Cement Association, to assist the industry in planning and carrying out promotional campaigns in their own respective districts. The conference was held in April and was attended by Robert C. Collins, Warner Co., Philadelphia, Penn.; Stanton Walker, director of engineering, and Vincent P. Ahearn, executive secretary, National Ready Mixed Concrete Association; George C. Eady, Louisville, Ky.; Norman J.

Fredericks, Detroit, Mich.; C. Gray, Indianapolis, Ind.; R. P. Mumford, Springfield, Ohio; F. E. Schouweiler, Fort Wayne, Ind.; A. R. Shiely, St. Paul, Minn.; and Walter F. Tevs, Milwaukee, Wis.

It was decided that a letter would be sent out to association membership asking for copies of promotional and advertising material being used, in addition to summaries of promotion campaigns, plus comments on the use of various advertising media. The replies are to be consolidated after which P.C.A. and N.R.M.C.A. will meet again to map out a reissue of the advertising material which P.C.A. has given the association on metropolitan markets and farm markets. Later, members of the industry will be asked to send copies of everything used to promote the use of ready-mixed concrete, such as publicity, pencils, slide rules, etc. These will be displayed at the next N.R.M.C.A. convention-exhibit. Also planned is an association primer on promotion efforts, based on the replies received from the above mentioned letter to member companies.

Safety Trophy

ASH GROVE LIME & PORTLAND CEMENT Co., Kansas City, Mo., has presented a trophy to its Galloway plant, Springfield, Mo., for completing the calendar year of 1948 without a lost-time accident. At the National Lime Association convention, held at Hot Springs, Va., May 5, 1949, this plant was awarded a certificate of honor for its accident-free safety record for the year.



Trophy presented for accident-free year

Iron Blast-Furnace Slag

PRODUCTION of iron blast-furnace slag in 1948 reached a new high of 21,131,000 short tons valued at \$22,360,000 a tonnage 8 percent above the 19,581,679 short tons valued at \$19,525,482 in 1947. These statistics are based on a canvass conducted by the National Slag Association, of the 42 companies operating some 68 plants that prepare iron blast-furnace slag for commercial use. Results of the canvass were assembled in co-operation with the Bureau of Mines.

The major product, screened air-cooled slag, amounted to 17,656,200 short tons, an increase of 6 percent over the 1947 figure. Of this total, 15,477,400 tons, or 88 percent, were used as railroad ballast, aggregate for portland cement concrete, and in bituminous construction and for other types of highway work. The balance of the screened, air-cooled slag was consumed in the manufacture of mineral wool, roofing, concrete block, airport construction, agricultural uses, sewage trickling media and in other uses.

Unscreened slag processed in 1948 amounted to 604,000 short tons valued at \$370,220, representing an increase of 35 percent over the 1947 figure. The bulk of this material was consumed in roads and streets in other than concrete or bituminous construction and for other uses. In 1948 the average value per ton for screened slag was \$1.09 compared with \$1.03 for the preceding year, while the value for unscreened slag amounted to \$0.61 per ton in 1948 against \$0.57 in 1947.

Substantial increases in the amount of granulated and lightweight slag processed were recorded for 1948. Production of granulated slag amounted to 1,517,500 short tons, compared with 1,291,000 tons in 1947, the bulk of which was used in the manufacture of cement. Slag processed as lightweight aggregate in 1948 totaled 1,353,200 short tons, 20 percent more than the tonnage reported for 1947.

In 1948, the transport pattern changed somewhat. Whereas in 1947, railroads transported 59 percent of the total tonnage, rail shipments in 1948 declined to 53 percent. Transportation of slag by trucks increased from 40 percent of the total in 1947 to 46 percent in 1948, while in both years transportation by waterway remained unchanged at 1 percent.

Limestone Shipments on Great Lakes

SHIPMENTS OF LIMESTONE on the Great Lakes amounted to 22,282,425 net tons in 1948, a new all-time mark, nearly a million and a half tons over the previous record set in 1948, the Lake Carriers' Association reports.

Production



Straight line crushing and screening installation of Tyrone Rock Products Co., Tyrone, Ga. To extreme left truck is dumping quarry-run rock to hopper serving 48- x 60-in. jaw crusher. Rock is fed to primary crusher by a 5- x 14-ft. apron feeder. Next in line of flow is the secondary, a 5½-ft. cone crusher with a vibrating grizzly mounted above it. Material is then conveyed to a 5- x 12-ft. vibrating screen mounted above a 4-ft. short head

Straight-Line Crushed Stone Plant

Modern plant of Tyrone Rock Products Co., Tyrone, Ga., designed for stockpiling finished materials over reclaiming tunnel. New granite quarry opened

INDUSTRIAL TRANSFORMATION of the South has been in progress for many years and as this trend continues to move forward, many communities, that only a few short years ago were relatively unimportant, have grown to cities of considerable importance. The newness of some of the cities in the South is exemplified by office and business structures of modernistic design, wide and well-paved

streets and residential districts that compare with any in the United States.

For the state of Georgia, the city of Atlanta is the industrial and civic hub for the region and while it is an older city, it still continues to draw to it a fair share of the progress that is going ahead in the South as a whole. Taking the crushed stone industry as one segment of the South's develop-

ment, one finds that the granite materials produced in the area contiguous to Atlanta are shipped in the form of riprap to such distance places as New Orleans, La., and that a new large government dam being planned near the Tri-state corner of Georgia, Florida, and Alabama may get its aggregate requirements from this section. From these two illustrations, it can readily be seen that the crushed granite producing section near Atlanta serves a large geographical area and an area dotted with industrial projects.

Tyrone Rock Products Co., with offices in the William-Oliver Building, Atlanta, Ga., came into the crushed stone industry as a part of this region's growth with a new and modern operation constructed at Tyrone, Ga., a small community about 25 mi. south of the capitol city. The plant went into operation last October and was designed by Smith Engineering Works. It is located on the rails of the Atlantic Coast Line railroad.

Quarry and plant equipment is new and modern in the latest sense and the general layout is almost a straight



General view of the Tyrone Rock Products Co. quarry. The top cut is 25 ft. in depth



final reduction crusher. The crushed material then is elevated to the screening station, from which materials fall to storage over a reclaiming tunnel (this section contains four screens, one double deck and three single deck). To right of overhead screening structure is a single deck sand screen, with stacker belt in foreground. Behind the stacker belt is the inclined belt from the reclaiming tunnel which elevates material to the loading plant

line, with belt conveyors being used for all material elevating and conveying. The final screening plant is an elevated steel structure with a battery of four vibrating screens (one double deck and three single deck) all in the same structure and with the various sizes of aggregate produced falling to ground storage below. This rock is reclaimed by a belt conveyor operating in a concrete tunnel 208 ft. long. All larger sizes of aggregate are washed before loading. Dry sand is screened in a separate elevated screening unit located at one end of the main screening plant. All screens operate dry except at the loading point. The plant has a capacity of 2000 to 2500 tons per 10 hr. day, exclusive of the sand production, and was built by the staff of Tyrone Rock Products Co.

The primary crusher is a type "R" 48- x 60-in. Traylor jaw crusher; secondary crusher is a 5½-ft. standard Symons cone, and final reduction is accomplished by a 4-ft. Symons short

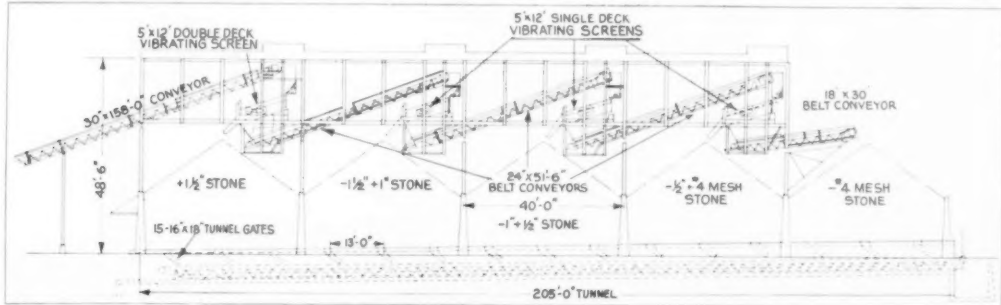
head crusher. All the screens in the plant are Tel-smiths and the vibrating grizzly scalper is a Symons. The conveyors were all supplied by Barber Greene Co.

Quarrying

The quarry is situated close to the primary crusher and haulage is over relatively easy grades. All stripping is done under contract. At the time of inspection, top soil was being loaded by a 2-cu. yd. Lorain shovel to a fleet of three Euclid dump trucks and the spoils were being used to build a dam to create an artificial lake from which the plant will get its future water needs. A D-8, Caterpillar and dozer is also available. To insure getting nothing but the best stone, about 3 ft. of the top stratum of granite are also discarded as strippings. This area is being drilled by jackhammers to a depth of 4 ft. The holes are on 4-ft. centers with 4-ft. burden. They are loaded with two to three 1¼-in. sticks

of 60 percent Austin Powder Co. gelatin and detonated electrically.

After the top stripping cut has been taken, a second slice of excellent granite is sent to the crushers. The stone passes all the local and state specifications and has a Los Angeles rattler rating of 42 percent. This top slice is about 25 ft. thick. Primary drilling is done with four Sullivan wagon drills. They have three TM-40's and one TM-350. These work on the brow, drilling holes on 9-ft. centers with 6 ft. of burden. The holes start with 3-in. dia. steel and end with 2¼ in. being drilled to a depth of 25 ft. The front row of two rows of holes is shot with instant caps and the back row is shot at the same time but with millisecond delay caps. The holes are loaded to within five feet of the top with 20 lb. of 60 percent gelatine in the bottom and a similar amount of 40 percent gelatine nearer the top. Austin Power Co. dynamite is used, along with some Hercules and Atlas explo-



Diagrammatic flowsheet of Tyrone Rock Products Co., screening plant

PRODUCTION



John W. Boland, general superintendent, left, and J. W. Hale, office manager



In background may be seen vibrating grizzly and 5½-ft. cone crusher and in foreground is the 5- x 12-ft. screen and 4-ft. short-head cone crusher



One of four wagon drills used at this operation

sives. Kennametal tungsten carbide chisel bits predominate in blast-hole drilling, with some tungsten bits from the Rock-Bit Service Co., Asheville, N. C., being used. Chisel bits are favored over the cross type and while some drilling is done with older style bits, John W. Boland, general superintendent, expects to use just carbide inserts very soon. Some steel is sharpened in the company's shops which are equipped with two Gardner Denver bit sharpeners.

Air for drilling is supplied by two Sullivan compressors of late design. One Model F, 2 cylinder, is driven by a built-in, 150-hp. General Electric synchronous motor with controls by the same company. This unit is supplied with a Dollinger Corp. intake air filter. The second compressor is slightly smaller and is driven by a 100-hp., built-in type CS induction motor with controls by the same manufacturer. This unit has an Air-Maze Corp. air filter. Both are equipped with McCord forced feed lubrication and deliver air to an 8-in. flanged steel service line at 125 p.s.i. These two units make a very neat, compact, and serviceable installation.

Loading in the quarry is done by two Bucyrus-Erie 54-B, 2½-cu. yd. shovels. One is a diesel-driven unit and the other electric. They load to four Koehring Dumpsters, each having a pay load of 5 cu. yd. They also have one Euclid unit that carries an 11.1 cu. yd. load (struck measure).

Crushing and Screening

The primary jaw crusher is mounted at ground elevation so that it discharges direct to the 42-in. offbearing belt conveyor. This makes a rather high top elevation for this crusher and a dirt ramp has been constructed so that all haulage equipment backs up this ramp and dumps to the end section of a 5- x 14-ft. apron feeder built under the direction of Mr. Boland. The primary crusher is driven by a 200-hp. Allis-Chalmers motor through "V" belt drives. Over the primary crusher assembly is mounted an Electrolift hoist for handling oversize rock and/or for repair purposes.

Starting with the 42-in. belt as No. 1 and going through the plant in operational order, the belt conveyor characteristics are as follows:

	Belt Conveyor	Hp.
No. 1:	42 in. x 125 ft.	15
No. 2:	30 in. x 81 ft., 6 in.	15
No. 3:	30 in. x 158 ft.	25
No. 3-A:	(To be installed) will return oversize to final reduction crusher.	
No. 4:	24 in. x 51 ft., 6 in.	10
No. 5:	24 in. x 51 ft., 6 in.	10
No. 6:	24 in. x 51 ft., 6 in.	10
No. 7:	24 in. x 42 ft.	10
No. 8:	24 in. x 199 ft.	10
No. 9:	24 in. x 245 ft.	40
No. 10:	24 in. x 48 ft.	10
No. 11:	24 in. x variable length	10
	Total	165

Tunnel belt
Loading belt (inclined)
Horizontal truck loader
Sand stacker belt



Power shovel loading overburden to dump truck. Note dozer in background

The scalping and screening equipment in the order of use has the following characteristics:

No. 1: vibrating scalper grizzly, 42 in. x 5 ft., Norbury, set to 2½-in. opening, operates dry.

No. 2: heavy duty, 5- x 12-ft. scalper, 2 in. sq. openings, ¾-in. dia. wire, dry, single-deck.

No. 3: heavy duty, 5- x 12-ft., dry, double-deck (at present this screen operates with one deck but later a conveyor will be installed that will return the oversize from its top deck to the final reduction crusher). This screen prepares plus 1½-in. stone.

No. 4: single-deck, 5- x 12-ft., dry, Vibro-King, prepares minus 1½-in., plus 1-in. stone.

No. 5: same as No. 4, but prepares minus 1-in., plus ½-in. material.

No. 6: same as No. 4, prepares minus ½-in., plus ¾-in. stone.

No. 7: single-deck, 4- x 10-ft., dry, sand screen. Prepares minus ¾-in., plus 4-mesh, and minus 4-mesh screenings.

No. 8: double-deck, 4- x 10-ft., rinsing screen with a wear-taking top deck.

The flow of rock through the plant is as follows: The primary crusher discharges it to belt No. 1. This belt delivers to the vibrating scalper grizzly (No. 1 screen) with fines falling to belt No. 2. The oversize passes to a 5½-ft. standard cone crusher that is powered with a 200-hp. motor through Tex-rope drives.

Belt No. 2 delivers to the heavy duty screen scalper (screen No. 2) with oversize going to the 4-ft., short-head cone that is powered with a 150-hp. motor. The crushed material and the throughs from the screen go to belt No. 3. This belt serves the first screen (double-deck) in the final screening plant, and prepares the plus 1½-in.



Primary crusher, a 48- x 60-in. jaw



Belt conveyors Nos. 1, 2 and 3. Belt No. 1 discharges to secondary crusher; belt No. 2 discharges to final reduction crusher and belt No. 3 elevates material to screening plant, background



Diesel powered shovel, foreground, and electric shovel of same capacity, background. Note dozer for clean-up work

rock. At time of inspection only one deck was in use, however, it will soon be equipped with a second deck and the plus 2-in. stone returned to the 5-ft. cone crusher by a 24-in. belt conveyor (conveyor No. 3-A).

The throughs go to belt No. 4 which serves screen No. 4, which screen prepares the minus 1½-in., plus 1-in. stone. Throughs in turn fall to belt No. 5 which discharges on to screen No. 5, which prepares the minus 1-in., plus ½-in. rock, and its throughs go to belt No. 6 for transfer to screen No. 6 where the minus ½-in., plus ¾-in. rock is sized. The throughs here go to belt No. 7 serving screen No. 7 that separates the minus ¾-in., plus 4-mesh and the minus 4-mesh granite

screenings. All except the screenings fall to a storage pile over the reclaiming tunnel. Sand screenings go to a stacker belt for ground storage.

The dry screens mounted in the screening plant are all driven by Louis Allis motors through "V" belt drives. An International tractor and dozer is available to push materials over the reclaiming gates. In the reclaiming tunnel are three gravity-type gates for each stockpile.

Loading Plant

The reclaimed rock is elevated to a point above the wash screen, where a system of flop gates can divert it to any four chutes, allowing loading to

(Continued on page 86)

Limestone



Left: Rear of shale planer employed to excavate amorphous limerock in quarry of Carolinas Cement & Lime Co. Short cross conveyor transfers bank material to main plant conveyor, foreground. Right: Cutting arrangement of planer, which resembles a bucket elevator with chisels in place of buckets. Main drive for the assembly is a 60-hp. motor. Note smooth face of quarry.

Shale Planer Excavates Limerock

High carbonate stone marketed as agstone, fertilizer admixture, road base, stock feed filler and for other special uses. Product dried and shipped in either bulk or bags

CONSTRUCTION of the new Carolinas Cement and Lime Co., Harleyville, S. C., plant was started in January, 1946. First operations got underway in January, 1947, and now this company is serving most of South Carolina, parts of Georgia and North Carolina, with a high quality agricultural liming material. Harleyville is in the eastern section of the state and is about 40 mi. west of Charleston.

One of the things that makes this operation of particular interest is the method of recovering the limerock from the deposit. The material, known as santee marl or limestone, is composed of lightly cemented, rather finely comminuted shell fragments, with some whole shells in the upper portions. An Eagle Iron Works 60-ft. shale planer that operates downward against a 50-ft. bank is used.

As will be seen from the illustration, this planer keeps the walls of the pit smooth and practically vertical, giving the over-all impression of neatness and good housekeeping. The device resembles somewhat a conventional bucket elevator in reverse, but in place of buckets, special cutters are fastened to the assembly and these shave, or plane off portions of the bank. The unit has a capacity of 50 t.p.h. and only two men are required for the entire quarrying operation.

At the outset, a pit was dug by conventional dragline and shovel methods. When the pit had been opened the cutter was placed in operation and at the time of inspection had cut three swaths through the area. The width of each cut can easily be seen in the



Inclined section of 1440-ft. belt conveyor that transfers material from quarry to plant

LIMESTONE



Weatherproof, geared motor driving one section of main quarry to plant belt conveyor

illustration. The unit swings on an arc of 180 deg. and is assembled on a special track arrangement. The machine cuts 2 ft. into the bank before it is necessary to move the rails forward. However, each cut is only $\frac{1}{2}$ in. of forward advance. As each $\frac{1}{2}$ -in. cut is made, the cutter tower swings back and forth making a semi-circular cut in the bank. The relatively soft limerock passes to a short belt conveyor that is part of the planer assembly and this short conveyor serves an 18-in. belt conveyor that rests on the bottom of the pit. This conveyor is the first of a series of pit belts that total 1440 ft. in length. This conveyor has Hewitt belting. All the other belts in the pit are 24 in. wide and all ride Hewitt-Robins idlers.

The shale planer has for its main drive motor a 60-hp. unit. The swing motor is 5 hp., a screw feeder takes $1\frac{1}{2}$ hp. and the short cross belt a 3-hp.



Overhead storage bin for ground material of 1000-ton capacity from which trucks can be loaded, right, or railroad cars, left

motor. Material cut by the planer ranges in size from flat pieces possibly the size of a man's hand on down to fines.

Limerock in the deposit has a total depth of around 120 ft. Some water is made by the opening and it is removed by three pumps, the main pump being a 2000 g.p.m. De Laval. About 20 ft. of overburden lies over the deposit and this is removed by dragline and trucks.

Material is described as an amorphous, high calcium limestone, and will average 95 to 98 percent calcium carbonate. It contains some fossils. This limestone is finding a wide use in the area as an agricultural liming material, as an admixture for other fertilizers, road base, stock feed filler and other uses. Most of the material is shipped in bulk in car lots, but facilities are available for shipping in bags. Trucks can also be loaded at the plant. After drying, and pulverizing in a Pennsylvania hammermill, the finished

product is 40 percent minus 100-mesh and 90 percent minus 10-mesh. Finer material can be produced if desired. It is marketed under the trade name of "Santee."

Pit-run material is delivered to a covered surge pile, or the flow can go direct to the cross belt serving the rotary dryer. The material in the surge pile is reclaimed by a $1\frac{1}{2}$ -cu. yd. Sauerman crescent scraper so operated that the limerock passes to the main belt to the dryer without any feeder in between.

The damp limerock goes to an 8- x 90-ft. rotary dryer that at one time was a rotary cooler in a cement plant. The dryer is coal-fired by twin Riley stokers. The unit is driven by a 75-hp. G. E. motor through a Falk speed reducer unit. An exhaust fan driven by a 100-hp. motor supplies draft for the kiln. On the cold end of the kiln are two cyclone dust collectors augmented by a settling chamber at the high end

(Continued on page 86)



Structure, left, houses two cyclone-type dust collectors for rotary dryer. Feed for dryer is delivered by covered belt conveyor, left foreground. Structure at discharge end of dryer, to the right, houses a hammer mill, sacking machine and loading facilities for railroad cars or trucks. Storage silo, extreme right, is of 1000-ton capacity

Drilling Practices in Southeast

Piston-type, pneumatic drills successful in drilling blast holes of various depths in granite. Tungsten carbide bits widely used

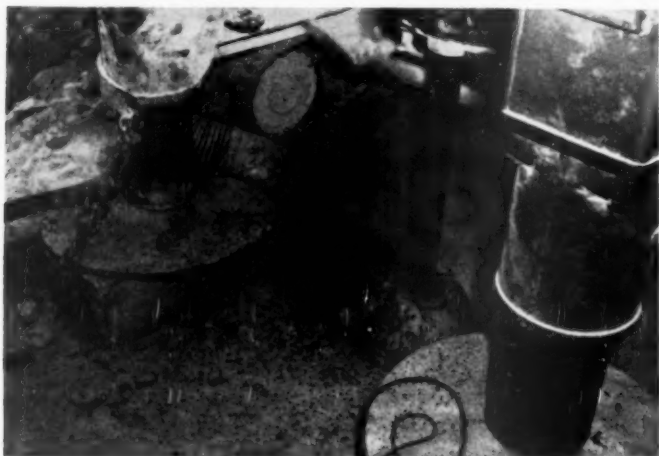
CONSIDERED HEREIN are performance records of the Ingersoll-Rand Quarrymaster drill as observed at three separate quarries, together with data on drill bits. During February, 1948, the writer was fortunate in attending the introduction of the Quarrymaster

drill to the rock products industries. (See *ROCK PRODUCTS*, March, 1948, p. 78.) Briefly, the Quarrymaster is designed to drill holes up to 70 ft. deep and up to 6 in. in dia. The heart of this drill is a piston-type, air-operated drill that strikes up to 200 blows per

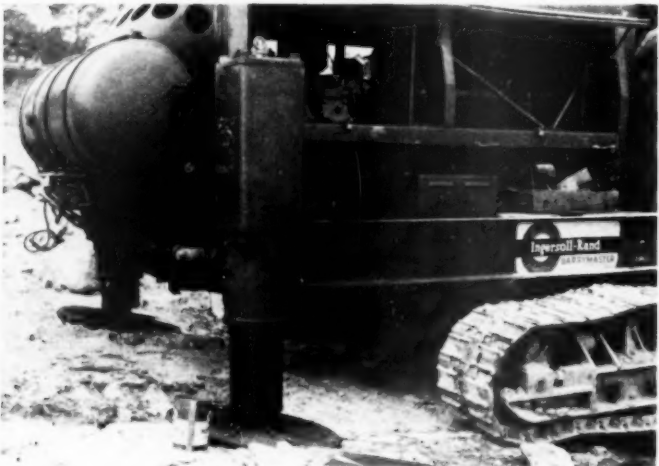
min. The drill weighs about 4500 lb. and is mounted on a suitable derrick all of which is assembled over crawler treads. The whole assembly weighs about 42,000 lb. On this drill, the drill rod is attached directly to the piston of the drill and reciprocates with it. The drill stem is hollow and waste air from the compressor goes down through the stem and removes cuttings that are later collected in a small dust collector that is a part of the assembly. Obviously it operates dry. The Quarrymaster is provided with a 500-c.f.m., all-diesel portable compressor that is mounted on the main frame of the drill. According to one operator, the designers of the drill will make available a compressor in the 650-c.f.m. range so that deeper holes can be more readily drilled and the over-all efficiency of the unit increased.

The use of tungsten carbide insert bits seems to have taken a firm hold in quarries during 1948. Early in the Spring of this year the writer visited many operations in Virginia, North and South Carolina and Georgia, and without a single exception, all the operators were using tungsten carbide bits in some form or another. Many were using Carset bits and others Timkin bits. Some were using these bits on jackhammers or similar drills, on wagon drills, and on Quarrymasters. Some of the wagon drills were operated dry, others wet. Some were using the "cross-type" bit. A few of the users had been working with tungsten carbide bits for some time, others only a few months, and one operator had his first supply only three days.

At the three quarries considered here, all were using the 5½-in., cross-type Carset, tungsten carbide insert bits supplied by Ingersoll-Rand. It seemed to be general practice that when two adjoining wings of the cross bits were broken, the bit was discarded. At one operation, the driller, when one wing was broken, would grind down the opposite wing thus making essentially a chisel bit out of the cutting section. He found that the chisel bit cut faster than the cross bit but it did not work too well in seamy ground as the chisel bit had more of a tendency to follow the seam than did the cross bit. These bits when new cost \$250 each, so considerable effort is made to extend their life by grinding the bits. Two of the operators ground the bits three to four



Flexible tube, center, carries chips from the hole to a dust collector. Waste air is forced into the hole through the drill, carrying away chips and at the same time acting as a coolant for the drill steel



Detail of power plant and supports for large pneumatic drill

times without loss of gauge, but one operator said he ground his bits as much as 18 times, but with a loss in gauge. None of the operators made any attempts to repair broken tungsten inserts.

Reasons for the breakage of the wings of a bit could not be pinned down to any definite cause, it being borne in mind that the tungsten insert is a very hard, tough, alloyed metal and that failure might be due to inherited, or operational causes. Using cross bits, the holes in all cases stayed vertical, or practically so.

Neverson Quarry

The first quarry visited where the Quartermaster was in use was the Neverson, N. C., quarry of Southern Aggregates Corp., which is operated under lease by Bryan Rock & Sand Co., Raleigh, N. C. (See ROCK PRODUCTS, July, 1948, for a complete description of this operation.) J. M. Gregory is president of Southern Aggregates Corp. and Richard T. Lassiter is treasurer. James E. Bryan is president of the operating company, J. D. Lane is general superintendent, and Granville Rogers is superintendent.

Incidentally, the company just placed in operation a new 48- x 60-in., Allis-Chalmers jaw crusher, replacing an older crusher of another make but at the same site. The new crusher is augmented by a 60-in. x 14-ft., 7-in., apron feeder. The crusher is driven by a 200-hp. motor through "V" belt drives. When set to deliver 8- to 9-in. rock, which is the practice here, the new unit can turn out 800 t.p.h. Several of the belt conveyors in the plant have been speeded up, more horse power added to the belt conveyors, and methods of feeding the belts changed in an attempt to take advantage of the increase of tonnage offered by the new crusher. The company's fleet of Euclid, rear-dump trucks has been increased from 7 to 16 units. The firm has also changed from delay blasting to instantaneous on primary shots.

The Neverson quarry is processing a hard, coarsely crystalline granite that has a Los Angeles rattler rating of 31 percent. They are drilling holes in the 80-ft. range at the rate of 6.0 to 7.0 ft. per hr. Conventional 5½-in. churn drills drilled around 1 to 1½ ft. per hr. in the same rock. They grind the bits four to five times with no change in gauge. The holes stay vertical with no seam trouble. The unit at this quarry has the 500-c.f.m. diesel compressor mounted on the rig. The total life of the bits is from 400 to 500 ft. One man and a helper operate the rig and setting up time from hole to hole is only a matter of a few minutes. As the air exhausts down through the bit, the cutting edge does not get hot.

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Truck dumping quarry rock to primary crusher feed hopper. Note plant to rear and right

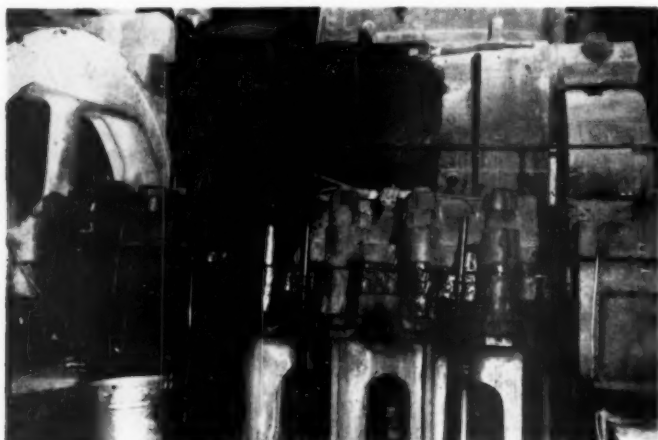


Minus 9-in. rock, discharge from a 48- x 60-in. jaw crusher, being elevated to the secondary crusher installation



General view of Neverson quarry of Southern Aggregates Corp. Note power shovel loading rear-dump truck, upper left, in removal of overburden; three large pneumatic drills, upper center; and electric power shovel handling quarry rock, lower left

QUARRYING



A 48- x 60-in. jaw crusher that is driven by a 200-hp. motor through V-belts

McLeansville Quarry

The McLeansville operation is one of the new plants of Superior Stone Co. The quarry is located between Burlington and Greensboro in North Carolina. R. B. Arthur, vice-president of the company, is in charge, with A. D. Hagwood as superintendent. W. T. Ragland is president of the company, E. U. Ragland is vice-president, with head offices in Raleigh, N. C., and E. Lee Heidenreich is consulting engineer.

The Quarrymaster drill, at this quarry, was placed in operation late in Fall of 1948. The rock is granite

with a Los Angeles rattler rating of 25 percent. As the quarry is a new one, the only data available as to what a conventional churn drill did in this rock were by a drill contractor who drilled a water well to a depth of 110 ft. at this site. This operator drilled about 5 ft. per 8 hr. or roughly 0.6 ft. per hr. In this quarry they drill to a depth of 34 ft. using the 5½-in. Carset, cross bit at a drilling speed of 4 ft. per hr. The average life of a bit is from 500 to 600 ft., one bit giving 734 ft. being re-ground 18 times, according to the drill runner.

Woodleaf Quarry

The Woodleaf quarry is owned and operated by the Southern Aggregates Corp. It is one of the older operations

and is located near Salisbury, N. C. The drill was being used on a bottom cut in the quarry and was drilling 35-ft. holes in seamy ground. At this operation the bits are ground three to four times, and have a life of 200 to 250 ft. per bit. They average 1½ ft. per hr. with conventional 5½-in. churn drills but with the Quarrymaster are getting 6½ ft. per hr. At this quarry it is not necessary to change drill stems, for 35-ft. lengths of drill steel are used. The back-break in some parts of the lower quarry is severe and chisel bits have tough going there but a cross bit works well. The unit uses 7 gal. of diesel oil per hr. In some parts of the quarry the drill can cut 10 ft. per hr., and at the time of inspection a driller had just completed a 35-ft. hole in 3½ hrs. The cuttings collected in the dust collectors that are an integral part of the machine appeared to be mostly 10-mesh top size, with most of it being in the minus 20-mesh range. These operators make a chisel bit out of broken bits where one wing is damaged and use that in the non-seamy ground. R. F. Wolfe is superintendent at Woodleaf.

Cement in China

CEMENT PRODUCTION in China is increasing steadily, *Mineral Trade Notes* reports. Output of the National Resources Commission, which is 40 percent of total production of cement in China, reached 243,477 metric tons in the calendar year 1947. Although exact figures for total China output are not available, it may be well over 600,000 metric tons.



Overall view of crawler-mounted, piston-type pneumatic drill, total weight of which is 42,000 lb.



Heart of the pneumatic drill is this 4500-lb. capacity piston, capable of striking up to 2000 blows per min.



This tungsten carbide bit has drilled about 200 ft. in granite and is still in excellent condition

Industrial Sand Producers Meet

Business conditions, railroad car situation, legislation, compensation considered at annual meeting

THE NATIONAL INDUSTRIAL SAND ASSOCIATION had a most excellent attendance at its Fourteenth Annual Meeting held on May 11, 12 and 13 at the Homestead, Hot Springs, Va. The total attendance was larger than last year. Three new directors were elected at the meeting; George F. Pettinos, Jr., John F. Putnam, The National Silica Co., and Charles G. Runkle, Ayers Mineral Co. George A. Thornton, Ottawa Silica Co., was re-elected president, with Sterling N. Farmer, Sand Products Corp., and C. M. Hardy, Houghland and Hardy, likewise re-elected vice-president and treasurer, respectively.

The next meeting will be held at the Greenbrier, White Sulphur Springs, W. Va., on October 19, 20, and 21 with the Fifteenth Annual Meeting going to the Homestead, Hot Springs, Va., on May 10, 11, and 12, 1950. The board of directors instructed V. P. Ahearn, executive secretary of the association to investigate the possibilities of suitable dates at the Broadmoor Hotel, Colorado Springs, Colo., for the 1950 Fall meeting. During the meeting there appeared to be a considerable divergence of opinion as to holding the Fall meeting in the West but a vote indicated that the majority of the members favored that move and the board of directors desired to meet the wishes of the majority.

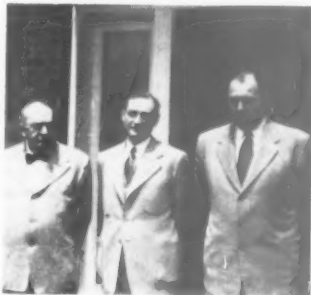
The first day's session, with George A. Thornton presiding, dealt with financial reports, report of the nominating committee, and other association committee activity at which time Stanton Walker, consulting engineer for the association, reviewed the subject of packaging finely ground silica which included an outline of the work with the St. Regis Paper Co., on which Mr. Walker had previously reported to the group one year ago. He also spoke of conferences with engineering rep-

resentatives of the Union Bag and Paper Corp. and indicated that a suitable sacking machine might be developed by that company so as to practically eliminate the dust hazard. The Union Bag machine would be a sewed, or a glued sack and not a valved unit. Mr. Walker also mentioned that General Mills might take over these activities for the above mentioned bag company. The subject of contributions to associations related to, but outside the association, was reviewed at this session.

The main speaker for the morning was Ewan Clague, commissioner of labor statistics, who, by means of a set of charts gave an interesting talk on the "Economic Outlook for 1949." His chart on wholesale prices indicated that, as of May 1, further wholesale price reductions will be more gradual and that while some commodities were going down, others were showing an upward trend, but the "down" group carried more weight. Another chart indicated that the biggest labor decline or "squeeze out" as he termed it was in the industrials. Employment in trade was satisfactory and government employment steady. Further unemployment increases will result from school graduations, with emphasis on veterans now in college who will graduate soon. He brought out that we are definitely not in a recession as far as the over-all employment picture was concerned. Farm employment is rising, with displaced persons arriving here mostly going to the farms. Other charts showed the output of work per man-hr. to be increasing and he pointed out that when some 16,000,000 workers in that category are involved a 3 percent increase in productivity could throw half a million people out of employment. He also pointed out the trend toward farm mechanization especially in cot-



Looking hungrily at the tray George A. Thornton is holding are E. J. Campbell, left, and Admiral Nalzey. Mr. Thornton was re-elected president of N.I.S.A.



New directors, left to right, John F. Putnam, Charles G. Runkle and George F. Pettinos, Jr.

ton, grains, and corn as eventually having its adverse effect on employment and that the total unemployment may go as high as 4,000,000. He said New England was in worst condition as regards unemployment with California also being hit, with textiles and woollens taking most of the rap.

Mr. Clague also brought out that people were living longer and that one-year-per-decade of life increase was indicated. This has its effect on employment and retirement age and thus the trend was towards a low age pension. The speaker did not think a depression like the one in '29 to '32 was imminent because of governmental supports to the weak spots such as protective deposit insurance, etc.

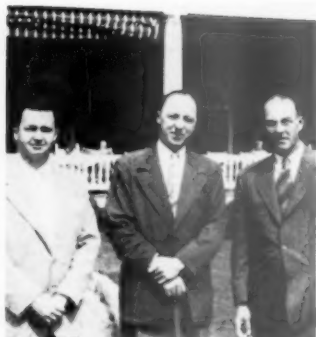
The second day's meeting was presided over by Sterling N. Farmer. Arthur H. Gass, chairman, Car Service Division, Association of American Railroads spoke on "Railroad Transportation Service in 1949." He said the tonnage level now was about the same as in 1942 but that the railroads owned more equipment than in that year. Speed of "turn-around" has increased. The wider use of diesel units by the railroads was increasing efficiency and he pointed out that one modern diesel was equivalent to three



Apparently enjoying the food and setting are (left to right) Edward O. Schneider, Mrs. and Mr. E. C. Sawyer, R. S. Lebold and W. H. Paddison



Mrs. C. G. Runkle listens attentively to C. M. Hardy's story, while Mrs. A. Y. Gregory apparently heard it before



Three new members, all of Concrete Materials Co., Waterloo, Iowa, are (left to right): G. M. Mason, F. E. Bellamy and W. W. Roberts

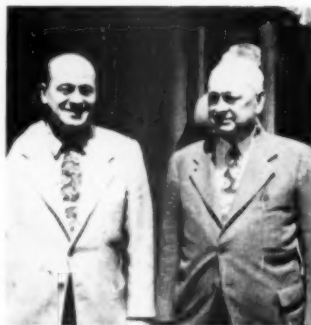
steam locomotives. Further increase in railroad efficiency was attributed to "Central Traffic Control" (C.T.C.) under which system of railroad operation a single line road would come within 75 percent of load-carrying capacity as compared to a similar but double-tracked system. He said the use of covered hoppers has resulted in railroad ownership of 17,665 units with 2944 on order and there were now 9699 diesels in use as compared to 1365 in 1942. He voiced the fear that socialization could result from first bleeding an organization to death and then ending with government ownership. The speaker, in answer to a question posed by Mr. Thornton, said that labor accounted for most of the railroads' increased operating costs.

T. C. Matthews, Pennsylvania Glass Sand Corp., presented his report for the Traffic Committee after which William W. Collin, Jr., commerce counsel for the group, reviewed the subject of "Traffic Program of the Industrial Sand Industry."

The round table discussion of industry prospects for 1949 that was scheduled for the day previous was taken up at the conclusion of Mr. Collin's review.

Business Outlook

Letters had been sent out previous to this meeting to various members in different parts of the country asking them to briefly outline conditions and the outlook for business in their areas for 1949. A summary of these reports indicated that during the first three months of 1949 there was a gradual decline in volume with prices steady, but May volumes indicated a levelling off or possibly an upward swing in business. The various individuals reporting seemed to follow the thinking indicated by the statistics given by Ewan Clague of which we have here reported on previously. It was pointed out that while there had been some declines in the industrial sand business as compared to 1948, that the comparisons were being made with the best year the industry ever had, but in a general way industrial sand



Enjoying the sun are Arthur B. Schlesinger and J. M. Strauss

business was comparable with 1946.

Hamilton Allport, Standard Silica Corp., Chicago, Ill. said that freight rates had restricted business some but not much. The number of cars available was satisfactory although cars still are received in dirty shape. Outlook for 1949 will be off about 5 percent compared to 1948 volume, the best year the company ever had. Some

foundries are working only three to four days per week and the individual orders are smaller as a general pattern.

James B. Bergs, Pioneer Silica Products Corp., St. Louis, Mo., indicated that his company's volume would be about the same as in 1946 and said if profits for 1949 equalled those for 1946 he would be most happy.

J. S. Coxey, Jr., Industrial Silica Corp., Youngstown, Ohio, said the first quarter was off about 6 percent with 15-20 percent indicated for the second quarter.

Russell Cronenweth, Great Lakes Foundry Sand Co., Detroit, Mich., indicated that the first four months of this year would be about the same as last year. No car troubles and no change in prices are in evidence although buyers had asked for changes.

E. M. Durstine, Keener Sand and Clay Co., Columbus, Ohio, indicated that the tonnage for the second quarter would be off as much as 30 percent but that so far tonnages are up to those of last year.

A. Y. Gregory, Whitehead Brothers Co., New York, N. Y., reported downward trends of 10, 20 and 30 percent



After the lunch, P. W. Palmer, left, and T. C. Matthews, seem to be enjoying themselves

for the first three months of this year and declines in his area may continue slowly. The car situation is satisfactory.

Lyle T. Manley, Manley Sand Co., reported considerable drop in volume in his area (midwest) and cautioned that credit needs watching. He also called attention to the effect of loading cars in which such materials as vermiculite had been previously shipped, stating that a hatful of this material in a carload of moulding sand could cause a foundry thousands of dollars in losses because this material, when heated, expands many times its volume. As shipments of crude vermiculite are now coming into the Middle West and the East from western mines, the problem was pointed to as a serious one that called for much caution. It was brought out that contamination from other minerals such as perlite, crude sulphur, etc., could cause much trouble at the receiving end.

It was also developed that calcined dolomite had an adverse effect on foundry sand, and soda ash in sand going to an aluminum plant was also considered as bad. One member told how burlap caulking, where a titanium sand had been shipped, led to troubles at the buyer's end.

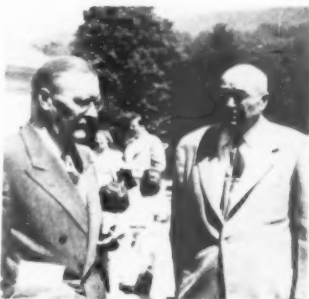
T. C. Matthews, Pennsylvania Glass Sand Corp., Lewiston, Penn., said volume was off about 30 percent and that poor cars were being received.

George F. Pettinos, Jr., George F. Pettinos, Inc., and Cape May Sand and Gravel Co., Philadelphia, Penn., said January, February, March and April were off 15, 30, 25, and 20 percent respectively, indicating an upward trend here. The dollar volume was off 25 percent for the first four months of this year.

Arthur B. Schlesinger, New Jersey Pulverizing Co., New York, N. Y., said January and February were down considerably, March was better, and that April showed an up-turn. Freight rates were forcing more trucking, and



Left to right, seated at a table, are: A. Y. Gregory, Mrs. J. F. Putnam, Charles G. Runkle, W. W. Collin, Jr., (back to camera), and Mrs. C. G. Runkle



A father and son combination at the convention: Harle Campbell, left, and E. J. Campbell

he spoke of a new trend where customers are using covered trucks. More requests for truck loading were indicated and he thought the step would continue. Price of material to trucks was slightly higher (25 cents per ton) than for other forms of transportation.

J. M. Strouss, Deckers Creek Sand Co., Morgantown, W. Va., said that in Indiana volume was off about 40 percent over the biggest year (1947).

George A. Thornton, Ottawa Silica Co., Ottawa, Ill., indicated the first

quarter was off 15 percent with the second quarter slightly lower still.

Clarence R. Wolff, National Pulverizing Co., and New Jersey Silica Sand Co., Millville, N. J., said volume was off 10 to 15 percent but looked better at this time. Cars were satisfactory and there were no labor troubles.

The final day's session was presided over by C. M. Hardy and the opening speaker was Theodore C. Waters, association counsel, who reviewed "Current State Legislative Developments Affecting the Industrial Sand Industry." Mr. Waters said that the calendar year 1949 found all state legislatures in session except Kentucky, Louisiana, Mississippi and Virginia. The general picture in the field of compensation shows the trend of increasing benefits to injured employees, including monetary increases in compensation, increases in limits of monetary liability and a broadening of occupational diseases compensation statutes to bring within their scope any and all injuries that may arise out of and in the course of employment. He advised the industry to expect increased costs for workmen's compensation, and this evolves upon management better plant protection.

Health Insurance

He mentioned that California, Rhode Island, and New Jersey have heretofore enacted health insurance legislation. Rhode Island law is that of an exclusive state fund. California law provides for insurance either in a state fund or with approved carriers. New Jersey law provides for approved carriers.

New York, he said, has just passed a "disability benefit law" as an amendment to the workmen's compensation law. He thought this a novel experiment and it may well set a pattern. He pointed out that one advantage is to place its administration in the state department administering the workmen's compensation law, thereby avoiding possible conflict of awards from both occupational and non-occupational injuries. It provides benefits of 50 percent of wages for 13 weeks of disability in any year with a

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A discussion group formed around a table after lunch are (left to right): Lyle T. Manley, Frank T. Rogers, Marcus Wright, III, John F. Putnam, V. P. Ahearn and Marcus Wright, Jr.



Diatomaceous earth is loaded by dozers to trucks driven under the structure in background

Reclaiming Diatomaceous Earth

EXPANSION of its plant at Quincy, Wash., to permit a greater output of diatomaceous earth, or silica, to meet the expanding market is under way by the Dia-Cousti-Lite Products Co. A 50-ft. addition to the building and new crushers and conveyors are included in the program which will see production amounting to 1500 tons a month in the immediate future. With

completion of the improvement work, three shifts will be operated in the plant of which N. J. Hallowell is manager.

Dia-Cousti-Lite company obtains its silica in an open-pit mining operation about 15 mi. south of Quincy, high above the Columbia River, where a pre-historic lava flow suddenly dried up a huge lake and left the marine

deposit of silica. In the past, all operations were manual, but now a Model 50 Caterpillar is employed to remove the overburden, which ranges 1 to 7 ft. in depth, with a LeTourneau carry-all used to move the silica to a truck loading camp. The deposit ranges to about 12 ft. in depth and occurs in a radius of 20 mi. from the site of present operations.

At the plant, the silica is pulverized and separated from the small amount of foreign material which it carries by a blower and cyclone collector. The product is finding a ready market for use in cement, paint, cosmetics and asphalt manufactured in the area.

Graphite Deposits

REPORT OF INVESTIGATIONS 4438, "Investigation of the Suffern Graphite Deposits, Rockland County, N. Y.," has been released by the Bureau of Mines and may be obtained free from the Bureau Publications Section, 4800 Forbes Street, Pittsburgh 13, Penn. During the spring of 1943, the Bureau excavated five test trenches, collecting 11 samples. In laboratory tests at the Eastern Experiment Station of the Bureau over 90 percent of the graphite contained was recovered.

Testing of Centrifugal Pumps

ALLIS-CHALMERS MANUFACTURING Co., which among its many products also manufactures a complete line of centrifugal, axial-flow and mixed-flow pumps, had "open house" for the industrial press on May 20, to which editors were invited for luncheon and first-hand inspection of the company's new pump-testing facilities at the West Allis, Wis., works.

The new centrifugal pump test floor is claimed to have the most efficient and accurate commercial pump test facilities ever developed, and employs some new applications of equipment for maximum testing accuracy and saving of time.

The new facilities will, through the reduction of test time, contribute to improvement of shipping time on pump orders, and more accurate and complete data should prove of value to users of pumps as well as to designers. The company has for many years maintained on file complete performance data on every pump it builds.

Of most interest among special devices developed is a speed-measuring device for continuous measurement and recording of speed, which is used in conjunction with a Baldwin electric strain-type torque meter to obtain the horsepower input into a pump.

Weight tanks instead of weirs are used for measuring quantity of water pumped which makes it possible to take test points automatically by means of a photoelectric cell which "reads" the weigh tank scale.

Motor speed, torque, and pump discharge and inlet pressure are recorded continuously during the test period. Except for adjusting the discharge valve, an operator can control all phases of pump testing from a master control panel.

Testing of commercial pumps is the main purpose of the new facilities but the data developed will be used as

well in improving pump design and there are plans for research work to be done on the test floor. From the standpoint of the customer, one advantage will be that he can learn the exact limitations and conditions under which a pump can be operated should he at some time decide to adapt its use to conditions for which it was not originally purchased.



Test floor showing relation of test stands with respect to control room

Mobile Dredge Operation

Reclaim 1000 tons per day of sand and gravel from White river at operation of Galloway & Jeffery Gravel Co.

A MOBILE, water-borne pumping operation, which lifts from 700 to 1000 tons of gravel per day from the bottom of the White River at Batesville, Ark., has been developed by Galloway & Jeffery Gravel Company, said to be the State's biggest gravel supplier north of Little Rock.

Company equipment dredges the river bed with a fleet of three floating units: a scow carrying a dredge pump, and two barges, each of 150-ton capacity, which transport gravel from midstream to the washing plant on the river bank.

Dredge Operation

An International U-18 diesel engine drives the 8-in. dredge pump, a heavy-duty Lightning manufactured by Hay Press Co. Operating at normal governed speed, 1600 r.p.m., the engine pulls the pump, running at 400 r.p.m., by a 10 V-belt drive from a 12-in. pulley on the engine take-off shaft to a 48-in. pulley on the pump. Barges are constructed of war surplus steel pontoons, lashed together to support wooden settling tanks, and are individually powered by war-surplus Chrysler marine diesel engines.

After the scow is towed out to the location and anchored, the barges are loaded alternately, one being emptied at the riverside gravel plant while the other is being filled in midstream. Gravel is dredged from a depth of 20 ft. below the surface and pumped to the top of the dredge, where it is directed into the barge through a sluice running across the roof of the dredge scow. The gravel is distributed

Sand and gravel is transferred from barge to plant hopper by 1-cu. yd. clamshell



evenly in the barge, to avoid capsizing, through the use of a swing gate on the end of the sluice. When the gate is raised, it permits water and gravel to reach the far side of the barge; with the gate in a vertical position, the mixture is forced to drop on the near side.

From six to eight large loads, averaging 120 tons each, are brought to the plant per day, according to F. L. Galloway, principal in the firm. Pumping is at the rate of 240 t.p.h. A barge is loaded in approximately 30 min.

At the bank, the barges are unloaded by an American Hoist & Derrick Co. derrick with a 1-cu. yd. clamshell. Gravel from the barge is transferred directly to the hopper of the washing and screening plant.

Fuller's Earth Production

PRODUCTION of fuller's earth in the United States in 1948 totaled 342,081 short tons valued at \$5,273,851, a 4 percent increase in quantity over 1947, Bureau of Mines reports. The quantity produced in 1948 surpassed

by 2 percent the previous record year, 1930, when 335,644 tons were produced.

Of the total 1948 production, 57 percent, or 194,225 tons, was consumed in mineral oil refining; 22 percent, or 74,095 tons, in absorbent uses; 7 percent, or 23,466 tons, in vegetable oils; 7 percent, or 22,608 tons in rotary drilling mud; and the remaining tonnage in insecticides, fungicides, filtering and clarifying, binder, chemicals and various other uses.

Amend Gravel Ordinance

OFFICIALS of the City Attorney's Office, Hollywood, Calif., have drawn up an amendment which would strike out of an existing ordinance banning gravel mining in Hollywood's hills, the provision that puts a two-ton limit on trucks used to remove gravel. This provision is considered by many authorities to be the heart of the ordinance and is said to have thwarted commercial gravel pit projects in that area. The proposed amendment, while removing the truck weight limitation clause, attempts otherwise to regulate commercial gravel mining in the city by requiring that excavation permits be issued only after the applicant has taken out a building permit, and that contractors would be required to post bond to assure that no damage would be done to streets or surrounding property by their operations.

Pavement Yardage

AWARDS of concrete pavement for the month of May and for the first five months of 1949 have been announced by the Portland Cement Association as follows:

	Square Yards Awarded	
	During May, 1949	During First Five Months 1949
Roads	2,197,826	8,331,863
Streets and Alleys	1,885,036	6,228,801
Airports	327,078	516,195
Total	4,409,940	15,076,859



Loading a self-powered barge with an 8-in. dredge pump. Material is dredged from a depth of 20 ft.

Flexibility



Portable compressor and wagon drill in foreground; power shovel loading quarry-run material to truck for 300-ft. run to plant next; and in background is crushing and screening plant

Wide Range of Limestone Products

Aggregates, agricultural and chemical limestone, plus dimension stone, produced at new quarry and plant of Quality Limestone Corp., Sussex, Wis.

ONE MILE SOUTH of Sussex, Wis., is a 60-acre tract of level land bounded on two sides by highway No. 164, and on the third side by the right of way of the Soo Railroad. There, under an average 3½-ft. overburden is an excellent deposit of hard limestone of approved chemical quality.

On this site, which is also near Milwaukee markets and shipping facilities, the Quality Limestone Corp. has been established by the Wolf family. Company personnel consists of Fred Wolf, father, who for 46 years was connected with one of the old limestone companies of Wisconsin; Clarence and Lloyd, sons, who for over 25 years have worked in the industry; Florence, a daughter, who for nearly as long was an office secretary for another rock products concern, and another daughter, Estella. Clarence is president of the firm, Lloyd is vice-president, and Florence is secretary-treasurer.

Materials produced at the new plant consist of building stone, agricultural limestone, road material, grits and especially prepared material to meet manufacturers specifications. The quarry has been opened near the Soo railroad. The company also has its own railroad siding. Worthington (315) air compressor and a Worthington wagon drill are used to prepare blast holes in the quarry. A General shovel loads the stone into trucks which haul it about 300 ft. to a Tel-smith primary breaker. This crusher is driven by a G. E. motor equipped

with an Allis-Chalmers Texrope V-belt drive.

Crushed rock is carried from the primary crusher on a 24-in. belt conveyor on 90-ft. centers to a 3- x 10-ft. double deck Vibro King Tel-smith screen. Here the oversize is chuted to an Allis-Chalmers 636 Type R reduction crusher. This crusher is powered by an Allis-Chalmers motor with a 10-

strand Allis-Chalmers Texrope V-belt drive. Discharge from the secondary crusher is returned by a short conveyor to the original belt conveyor and returns to the first screen. At the first screen, the plus 1½-, minus 2-in. material is carried by an 18-in. belt conveyor 50 ft. to a stockpile. Throughs fall to an 18-in. belt conveyor which

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Standing in front of the secondary crusher are Clarence Wolf, president; a trainee; Fred Wolf, father of the brothers and Lloyd Wolf, vice-president

Labor Relations

(Continued from page 41)

was alleged to be short-handed, and the employee was acknowledged to be "an average worker." So, the superintendent merely took the employee at his word and had a "quit slip" made out, and the employee's job ended that day.

The trial examiner for the N.L.R.B. found that the employee was discharged because of his union activities. The Board, however, reversed their examiner's finding stating: "Although the case is very close the preponderance of the evidence supports the employer's explanation that he asked the employee to move [from the company boarding house] because his chronic complaints about food were creating discontent among the men living there. Because of the isolated location of the boarding house [and limestone quarry], 14 miles from the nearest outside boarding facilities, such discontent could spread very easily."

The concluding statement in the text reads: "It seems clear that this employee was a chronic, and the principal complainer about the food served in the boarding house. By his words and conduct, he indicated dissatisfaction with that food. Often, at table he characterized it in unsavory epithets. Out of his wide experience in mining camps, the superintendent testified that one of the easiest ways of creating discontent among miners is to create dissatisfaction with the food being served in a boarding house, and that was what this employee was doing. For that reason, the superintendent said, he asked the employee to leave the boarding house. The superintendent's characterization of this employee as a 'trouble-maker' with respect to his conduct in the boarding house appears to be reasonable."

Complaint dismissed—as were also allegations by the union that the employer interfered in the union election.

Acquires Ownership of Building Materials Firm

LESLIE BASEHORE has acquired sole ownership and full operating control of the coal and building materials business of J. B. Basehore & Co. Founded almost 50 years ago as a coal distributor, the company later branched out into the building materials field and is now furnishing all types of brick, Belden face brick, cement, lime, stone, plaster, lightweight plaster aggregate, sand mortar, sewer pipe, and water-proofing materials.

Granted Contract

PERMANENTE CEMENT CO., Permanente, Calif., has received a \$215,971 contract to supply 72,000 bbl. of low-alkali cement for use in construction of Soap Lake Siphon on the Columbia Basin irrigation project.

"Trouble-free screening is a habit with these SECO VIBRATING SCREENS"

says Sherman B. Saunders of W. F. Saunders & Son, Nedrow, N. Y.



The Seco vibrating screen pictured above has been on the job over nine years in the modern sand and gravel plant of W. F. Saunders & Son, Nedrow, N. Y. Not only does it do a perfect job of screening — but it still operates smoothly and has never been shut down for repairs.



Here you see the second Seco screen in use in the Saunderson's plant. This Seco screen was purchased because of the trouble-free performance record of the first one installed over nine years ago. Together they produce about 120 tons of sand and gravel per hour. Everywhere, on all types of screening jobs, from ag-line to rip-rap, Seco screens are winning acclaim on performance.

Let Seco screening experts help you get trouble-free screening results. Models to fit every requirement.

Write Dept. M for new Seco Catalog No. 203.



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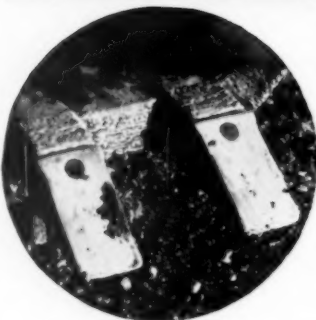
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Amsco

WELDING PRODUCTS



Amsco No. 459

Increases life 2 to 5 times for dippers, pug mill knives, brick dies, shredder knives, drag chain links, pulverizer hammers, sand pumps and similar parts. Amsco No. 459 is centrifugally cast... resists softening up to 800° F... and has a Brinell hardness of 500-600. No. 459 produces a chrome-moly martensitic iron deposit and is designed for severe abrasion service with moderate impact conditions.

The application above shows Amsco No. 459 applied to the front and teeth of a manganese steel walking dragline bucket, used for stripping overburden from iron ore at a Minnesota mine. In similar applications where more severe impact coupled with abrasion is encountered, Amsco Economy Hardface is recommended.

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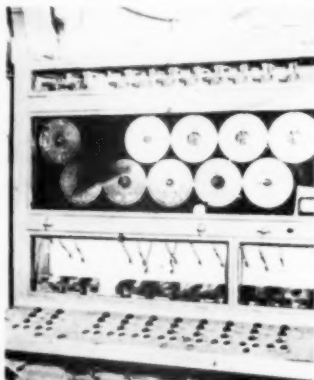
377 E. 14th St., Chicago Heights, Illinois
Offices in Principal Cities

Manufactured Sand

(Continued from page 59)

The horsepower requirements for some of the other major units in the plant are as follows:

Primary crusher, 42-in. Allis-Chalmers gyratory	250 hp.
20-B Tel-smith, secondary crusher	125 hp.
4½-ft. Symons cone crusher, third crusher	150 hp.
No. 48 Gyrosphere Tel-smith final reduction	150 hp.
Rod mill (Marcy)	350 hp.
Frick air compressors in ice plant	225 hp.



Section of control panel for concrete materials batch plant

The primary crusher is a 42-in., Allis-Chalmers gyratory unit that came from the plant of the Radford Limestone Co., Radford, Va. It discharges to conveyor belt No. 1 serving a two-deck dry 5- x 14-ft., Robins scalping screen. The top deck of this screen is a wear taker and the lower deck has 6-in. openings. The plus rock from both decks falls to a No. 20-B Tel-smith secondary crusher, or, if desired, the coarser sizes can go to the surge pile.

The rock from the surge pile is elevated to two, 5- x 12-ft., dry double deck Tel-smith pulsator screens that have 3-in., and 1½-in. wire on them. The screens are driven by a 10-hp., G.E. Triclad motor. These two screens prepare the cobbles (minus 6 in., plus 3 in.) and the minus 3 in., plus 1½ in. stone, but provisions are that either size or both sizes can be re-crushed in a 4½-ft. Symons cone crusher and the crushed products returned to these screens by a return belt (No. 4 belt). The two sizes of stone go to their respective stacker belts, each with a stone ladder at the discharge end.

The throughs from these screens are conveyed to the second final screening plant where there are two 5- x 12-ft., double-deck Tel-smith vibrating screens that have ¾-in., and 4-in. mesh-slotted wired respectively. This section of the plant produces the minus 1½ in., plus ¾ in. and the minus ¾ in., plus No. 4 rock. The two products go to their respective stacker belts. Here provisions are made so that the larger sized stone can be re-crushed in a No. 48 Tel-smith Gyrosphere crusher and the

crushed products be returned to these screens by a return belt. (No. 6).

The fines from the lower deck go to a stacker belt serving the surge pile ahead of the sand plant. Provisions are also made to bleed some of the coarser sizes to this surge pile when desirable.

At the outset of operations this belt discharged to the surge pile through a single spout, and hence the coarser pieces rolled to the outside of the pile with the fines in the cone. When this type of feed went to the rod mill it upset the uniformity of the grind, so a two-spout arrangement was installed and the condition corrected.

The quarry has been opened up alongside the plant so that only a short haul over easy grades is necessary. Some stripping of earth was necessary and the top layer of softer stone was being stripped as well. The stripping was being done with a Northwest backhoe with a 5-ft. extension. This unit was quite effective and at the same time kept the brow of the quarry free from loose rock. It loaded to one of the several Euclid rear-dump trucks. A model 820 Lorain dragline and shovel and a Lima shovel also were available for this work as well as a Caterpillar tractor and dozer. For primary drilling three Bucyrus-Erie, tractor-mounted, type 29-T, 6-in. churn drills were used. These drill from 2 to 2½ ft. per bit before re-sharpening is necessary. There are available ten Ingersoll-Rand wagon



Two double-deck screens operating in parallel that prepare the two finer grades of aggregate

drills; two F-172's, and four wagon FM-2's; and four Gardner Denver wagon drills model UMB. For secondary drilling 22 J-50, and PD-8, jack-hammer drills are available. Bucyrus-Erie sharpening equipment is used. The company has a model 54-B Bucyrus-Erie and a model 111 M Marion shovel for loading to a fleet of ten model 36 FD, 11.1 cu. yd. (struck measure) Euclid rear-dump trucks.

Atlas powder is used and four Atlas twin 50 blasting machines plus a Sul-

livan hydrojib also are available at the quarry. Primary air is supplied by four Ingersoll-Rand compressors: two 1000 c.f.m. Model XRE's, and two 2700 c.f.m. PRE's.

The reclaimed coarser sizes are given a rinse on a Tyler screen before being conveyed to the mixing plant. This plant runs on a 24-hr. per day basis and is designed to deliver 240 cu. yd. of concrete per hr. The company actually pours about 22½ hr. per day. Three 4-cu. yd. Koehring mixers are assembled so that one weigh batcher serves them all by a movable spout. The batching plant was supplied by the C. S. Johnson Co. and is fully automatic in operation. Natural cement (25 percent) produced at the Louisville Cement Co.'s Speed, Ind., plant, and portland cement (75 percent) are used. Vinsol resin admixtures interground with the natural cement with the above blend at the mixer give 4½ to 6.0 percent air-entrained concrete. Cubed ice for cooling the mixing water is supplied by five ice machines manufactured by the Vilter Mfg. Co. of Milwaukee, Wis. The two Frick compressors for these units are each driven by 225-hp., 180 r.p.m. G. E. synchronous motors.

The total connected load for the operation (dam and all) is 3800 kw. Water is pumped at the rate of 3100 g.p.m. to a storage reservoir and the entire camp, plant, etc., receives supply from this source.

The Clark Hill dam is being constructed by a group of six large contracting companies, which work under the name of the Allstates Constructors, Inc., with offices at the dam site.

Personnel at the dam consists of Grady L. Bain, resident engineer, and A. C. Marane, assistant resident engineer, both of the Army Corps of Engineers; Berton J. Bell, Public Relations, Atlanta, Ga.; and John Sprague, head of engineer laboratory, Marietta, Ga. C. D. Riddle is project manager and in complete charge. He also is chief engineer for the Walsh Construction Co. G. E. Murphy is construction superintendent, T. F. "Dutch" Taylor is job engineer, C. H. MacLeod is administrative officer and C. H. McCormack is office engineer.

Swedish Cement

CEMENT continued to be in great demand in Sweden in 1948, especially in northern Sweden where a number of power plants are under construction, *Mineral Trade Notes* reports. Total domestic production of cement in 1947 was 1,550,000 metric tons, representing an increase of about 6 percent over the 1946 output. A new cement plant built by "Cementa, Svenska Cement-försäljnings AB" was expected to expand total domestic capacity in 1948 by 20 percent. Imports of cement in 1947 totaled 20,219 metric tons, the major sources of supply being Great Britain and Poland.

SYNTRON

Speeds Up Bulk Material Handling!

"Vibra-Flow"

VIBRATING GRIZZLIES



Feed and Scalp in one operation. Increase crushing capacity and efficiency.

Bypass fines—oversize to crusher.

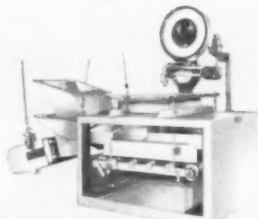
When feeding onto belt conveyors, they cushion the heavy abrasive lumps on a bed of fines. Their smooth, controlled flow assures even belt loads.

No motors, gears, pulleys, etc. to maintain.

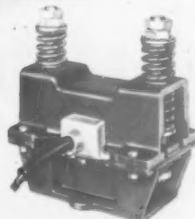
Write for Literature

SYNTRON CO.

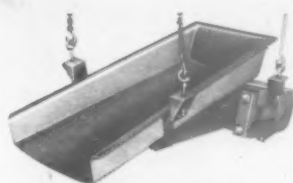
450 Lexington, Homer City, Pa.



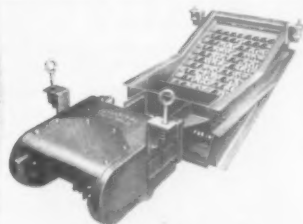
"CONSTANT WEIGH" FEEDERS
Accurate, Continuous Feed
by Weight



BIN VIBRATORS
Make Stubborn Materials Flow Freely



VIBRATORY FEEDERS
Up to Hundreds of Tons per
Hour — Rheostat Control of Flow



VIBRATING SCREENS
Wet or Dry — Single or
Multiple Decks



Pulverizers

Have you investigated our new
BRADLEY HERCULES MILL?
Unquestionably the last word in
Economy and Simplicity.
(Send for New Catalog No. 59)

BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

STEEL

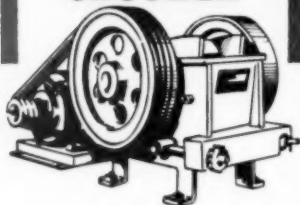
**Every Kind
Quick Delivery**

**Plates, Structural,
Bars, Sheets, Tubes, etc.
Carbon, Alloy, Stainless
Steels, Babbitt Metal.**

RYERSON

Joseph T. Ryerson & Son, Inc. Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco

MASSCO LABORATORY CRUSHER



A strong, compact, relatively light laboratory crusher with 4" x 6" jaw opening. Plate wear is taken up by a single adjustment; no shims, set screws or toggles. Smooth jaws provide easier cleaning and a better product. Special discharge opening for cement and gravel laboratory work. Descriptive literature sent on request.

MINE & SMELTER SUPPLY CO.

1422 Seventeenth Street
DENVER, COLORADO

Limestone

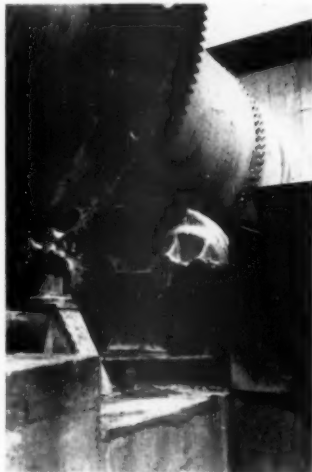
(Continued from page 73)

of the dryer. Dust from the unit is delivered to the main plant by a belt conveyor.



R. E. Camp, Jr., plant superintendent

Under certain conditions the dryer material passes over a Tyler vibrating screen via a bucket elevator with the fines going to the 3-tube St. Regis bag packer. Oversize goes to the hammermill that is powered by a 125-hp. G. E. motor, directly connected by a



Speed reducer driving dryer from 75-hp. motor

Falk coupling. The vibrating screen is only used for the sacked materials and serves essentially to remove foreign materials that might give trouble. The ground material is stored in a 1000-ton capacity, conical-bottomed, steel silo from which the material is drawn to a flat, shuttle con-

veyor that can load cars or trucks by reversing the direction of travel. Facilities are available to store some of the finished material on the ground should it be expedient to do so. The company maintains an Allis-Chalmers tractor dozer and a Bucyrus-Erie shovel. The latter finds use for loading ground stored, finished material.

Officers of the Carolinas Cement and Lime Co. are: J. Ross Hanahan, president; Charles F. Lewis, vice-president and manager; T. H. Carter, secretary-treasurer, and R. E. Camp, Jr., plant superintendent.

Production

(Continued from page 71)

railroad cars or trucks of dry or washed material. For car loading, a 100-ton capacity steel bin is provided, and stone intended for truck loading falls to a flat conveyor belt (belt No. 10) that delivers to a 3-compartment bin of 150-ton total capacity. The plant office is equipped with a set of Winslow truck scales.

Officers and personnel of the Tyrone Rock Products Co. are: W. M. Palmer, president; J. Francis Wilkerson, sales manager; John W. Boland, general superintendent, and John W. Hale, assistant superintendent.

Sand Producers Meet

(Continued from page 79)

\$26 maximum and a \$10 per week minimum. Insurance may be purchased from a state fund or from approved carriers. The speaker pointed out that in other states the legislative trend was to provide coverage for non-occupational injuries with more costs to the employers.

Theodore F. Hatch, Industrial Hygiene Foundation, was scheduled to speak on "Industrial Hygiene Codes and their Significance to the Industrial Sand Industry," but was unable to appear and Mr. Waters covered this subject in his talk.

The subject "The Outlook for Federal Legislation" was discussed by Charles A. Horsky at which time the cement case was reviewed, amendments to the wage and Hour Law, and the status of the Taft-Hartley Act informally discussed. George F. Petinos, Jr. asked that the subject of percentage depletion be studied.

Several notable absences from the meeting included Mr. and Mrs. Alfred J. Miller, Mr. and Mrs. A. Warsaw, Mr. and Mrs. A. N. Farmer, and Mrs. E. J. Campbell. Telegrams were sent to all, and in addition a letter was mailed to Mr. Miller who was in a Boston hospital. The letter expressed wishes for a speedy recovery and was signed by all attending the meeting.

The afternoon of each day was devoted to relaxation, golf, etc., with informal parties the evening of the first and last day. On the second day a picnic dinner was held at the Casino. For the ladies, a golf tournament was provided, and also a luncheon and a bridge-tea session.

Flexibility

(Continued from page 82)

carries it to a second screen, a 4- x 10-ft. triple deck Vibro King. Two sizes are chuted to stock piles, with fines falling to a third belt conveyor which discharges to an enclosed bin. All of the conveyors are of Atlas manufacture.

Adjacent to the main crushing and screening operation is a plant equipped to manufacture agricultural limestone and extremely small sizes of crushed stone for special orders. This plant is equipped with a Butler bin, a Link Belt elevator, two Allis-Chalmers size No. 3 pulverizers and a Cleaver-Brooks dryer. Later, bins charged by belt conveyors will be erected near the railroad siding and cars can be loaded by gravity.

Clarence Wolf directs the quarrying. About 200 lb. of Hercules Gelamite is used in 6 ft. holes. The stone, after blasting, is small enough to load to trucks by shovel for transportation to the crushing plant and still suitable for the stone cutters, for preparation of dimension stone.

The location, market, shipping facilities, overburden, quality of stone and experienced owners combine to make this a very promising venture. Design of the plant calls for a minimum of manpower. The main plant will operate with a driller, a shovel operator, two truck drivers, a man at the primary crusher and a plant maintenance man.

New Incorporations

Pifer Stone Co., Arlington, Ohio, has been incorporated with 240 shares, par value \$100. Roy G. and Floyd G. Pifer, and R. W. Lintz are the principals.

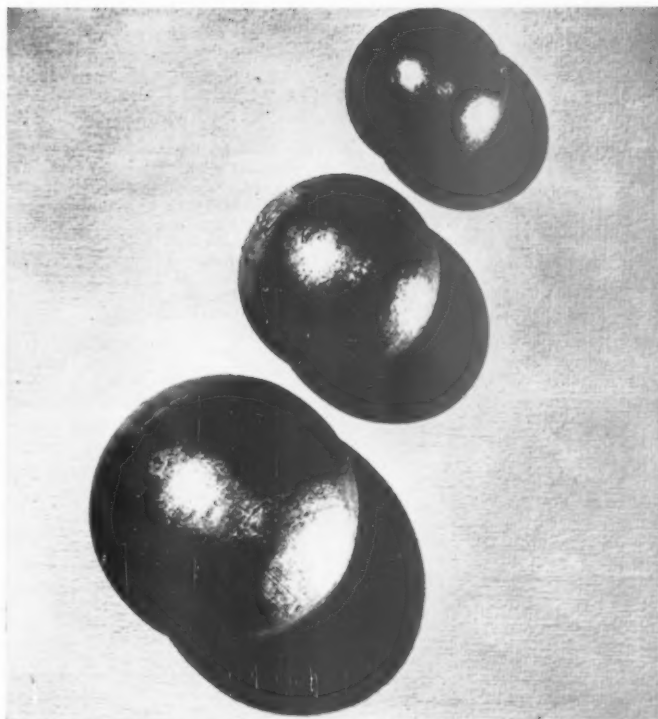
Sussex Lannon Stone Corp., Lisbon, Wis., has been organized with a minimum capital of \$30,000 and 500 shares, par value \$100, to operate a sand and gravel pit. John, Theodore and Mary Cappelletti are the principals.

Wingra Stone Co., Madison, Wis., has been organized by Stewart, Eldred and Dorothy Watson to deal in road construction and the sand and gravel business. Minimum capital is listed as \$50,000 with 1000 shares, par value \$100.

Valley Sand and Gravel Products Inc., Mission, Texas, has been incorporated with \$12,100 capital stock by George D. Young, R. W. Firebaugh, Sr., and R. W. Firebaugh, Jr.

Seaco, Inc., Columbia, S. C., has been granted a charter to deal in materials for road building and other construction. Capital is \$20,000. William H. Fuller is president of the firm.

Temple Gravel Co., Waco, Tex., has been incorporated by Mildred T. and H. E. Williams and Harold A. Crawford with \$300 capital stock.



THEY STAY ROUND

CF&I Grinding Balls are forged of tough abrasion-resisting steel, carefully heat treated for uniform wearing qualities. They are round and *stay round*, thus through their long life provide maximum grinding surface for most effective and uniform grinding.

Available in 3/4", 7/8", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 3 1/2", 4", and 5" sizes.



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GENERAL OFFICES: DENVER, COLORADO

IN THE EAST: WICKWIRE SPENCER STEEL DIVISION, NEW YORK, NEW YORK
ON THE PACIFIC COAST: THE CALIFORNIA WIRE CLOTH CORP. OAKLAND 4 CALIF.

Sintering Machinery Corp.

NETCONG, N. J.

Manufacturers of

DWIGHT-LLOYD* SINTERING MACHINES

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A. LESCHEN & SONS ROPE CO.
ESTABLISHED 1857

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New York • Chicago • Denver
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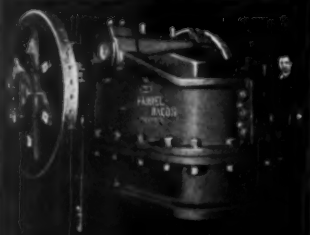
New FARREL-BACON CRUSHER

has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Mechanic frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help.

BA-1



FARREL-BACON
ANSONIA, CONNECTICUT

Manufacturers' News

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces that Walter Geist has been elected to his eighth term as president of the company. All officers and directors have been reelected.

Signode Steel Strapping Co., Chicago, Ill., has announced the election of John H. Leslie as president of the company. Formerly vice-president in charge of research and engineering, Mr. Leslie, succeeds his father, John W. Leslie, who becomes chairman of the board. John S. Gorman, vice-president and director of sales, has been elected vice-chairman of the board, and J. M. Moon has been promoted from sales manager to director of sales.

Continental Gin Co., Birmingham, Ala., has announced renewal of an agreement with SKF Industries, Inc., to act as a manufacturer and supplier of pillow blocks for industrial distributors in North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Tennessee.

Pioneer Engineering Works, Inc., Minneapolis, Minn., has appointed the following distributors: The Trevor Corp., Buffalo, N. Y., for the counties of Niagara, Orleans, Monroe, Wayne, Erie, Genesee, Livingston, Ontario, Seneca, Wyoming, Yates, Chautaugua, Cattaraugus, Allegany, Steuben, Schuyler, Chemung and Tioga; Contractors Sales Co., Troy, N. Y., for the counties of Otsego, Schoharie, Greene, Columbia, Montgomery, Schenectady, Rensselaer, Fulton, Saratoga, Washington, Hamilton, Warren and Essex; Contractors Syracuse Sales Co., Inc., Syracuse, N. Y., for the counties of Clinton, Franklin, St. Lawrence, Lewis, Jefferson, Oswego, Oneida, Herkimer, Cayuga, Tompkins, Cortland, Madison, Chenango and Onondaga.

Raybestos-Manhattan, Inc., Passaic,



John H. Leslie

N. J., recently honored 600 Pioneers of the Manhattan Rubber Division at its fifth annual dinner. Charles Kuhn, New York branch salesman with 55 years of continuous service, is the senior member of the Pioneers. Thirty-two new members of the organization, which is made up of employees who have been with the company for 25 years or more, were presented with pins.

The B. F. Goodrich Co., Akron, Ohio, has announced the appointment of William H. Campbell as manager of the Albany district of the replacement tire sales division. He succeeds Frank G. Harrison, Jr., who has resigned. Lewis B. McRae has been named manager of the Cincinnati district of the same division, succeeding Mark O. Ward, who passed away April 22.

Worthington Pump & Machinery Corp., Harrison, N. J., announces the election of Robert E. Marshall as secretary, with headquarters in New York, N. Y., succeeding the late C. Neal Barney. James W. Hepburn has been named assistant manager of the vertical turbine pump division in the territories west of the Mississippi River, and including Chicago, St. Paul and New Orleans, with headquarters at the Denver Works. S. Riley Williams, vice-president, recently addressed European audiences through shortwave radio Station WRUL on "U. S. Foreign Trade and U. S. Foreign Trade Policies," and was interviewed on the air by a staff member of the World Wide Broadcasting Foundation.

Detroit Diesel Engine Division, General Motors Corp., Detroit, Mich., has appointed Edward J. Scanlan as California zone sales representative in the states of California, Arizona and Nevada. He will make his headquarters in the vicinity of San Francisco. A "Mobile Training Unit" for instructing owners and operators in the maintenance and operation of the Series 71 diesel engines has been developed by the Detroit Diesel Engine Division.

R. G. LeTourneau, Inc., Peoria, Ill., has received a Certificate of Merit award in the Seventh Annual Business Paper Award Competition for its advertising campaign introducing the Tournapull "Roadster." This is the

More **CAPACITY** per square foot of screening area!

More **ECONOMY** per square foot of screening area!

That's a **UNIVERSAL!**

A wide range of models to meet your requirements.

Write today for new Catalog No. 109 on Screens and Screening.



Type
"Mr"
42" x 96"
Double
Deck

UNIVERSAL VIBRATING SCREEN CO.

MACHINE - WISCONSIN

fifth year in succession that the company has won this award.

Bemis Bro. Bag Co., St. Louis, Mo., has announced the retirement of Ernest B. Roberts as manager of the paper mill and multiwall bag factory at Peoria, after nearly 36 years of service. He plans to continue with the company in charge of pulp and rope purchasing with headquarters at Peoria. L. J. Finn, now assistant manager at Peoria, has been appointed to succeed Mr. Roberts as manager. Alfred B. Williams has been appointed sales manager of the Vancouver, Wash., plant. The company also announces that the multiwall plant in Houston has reached full production, and that a canvas department at the bag factory in New Orleans has been established.

Link-Belt Co., Chicago, Ill., announces that Allan Craig, sales manager of the southeastern division since 1945, has been transferred to Houston, Texas, as general manager of the southwestern division, where a new plant is about to be opened. Michael J. Perry, district manager at Moline, Ill., will succeed Mr. Craig as sales manager of the southeastern division, with headquarters at the Atlanta plant. Andrew K. Kolar, district sales engineer at Moline, Ill., has been appointed district manager of this office. John D. Riley has been named district manager at Newark, N. J., to succeed George E. Ramsden, who died on April 10. Mr. Riley has been district sales engineer at the Boston office since 1939. Announcement is also made that the Newark office has moved to the Essex Building in Newark, N. J.

Harnischfeger Corp., Milwaukee, Wis., has announced the appointment of George L. Staudt as advertising and sales promotion manager. He was formerly director of advertising for Standard Register Co., Dayton, Ohio. During World War II he served as chief, Counter Intelligence Corps Branch, G-2, War Department. Prior to entering



George L. Staudt

service, he was assistant advertising manager for the Illinois Central Railroad. Announcement has also been made of the opening of the new Teterboro, N. J., warehouse and offices.

Hyster Co., Portland, Ore., announces that industrial truck sales and service in Seattle, Wash., has moved to 753 Ninth Avenue, headed by V. G. Lindenberg. Territory covered includes all but five counties of Washington, northern Idaho, and western Montana. Retail truck sales and service facilities has also been opened at 5301 Pacific Blvd., Huntington Park, Calif., headed by L. W. Barclay.

American Brake Shoe Co., New York, N. Y., has appointed Gilfray

(Continued on page 90)

There's a Macwhyte Rope that's the right rope for your equipment

All job proved -- a thousand and one wire ropes to choose from

For easy handling and longer service use **PREformed Whyte Strand Wire Rope**—it's internally lubricated

Ask a Macwhyte representative to recommend the rope best suited for your equipment.

MACWHYTE COMPANY

2949 Fourteenth Avenue, Kenosha, Wis.

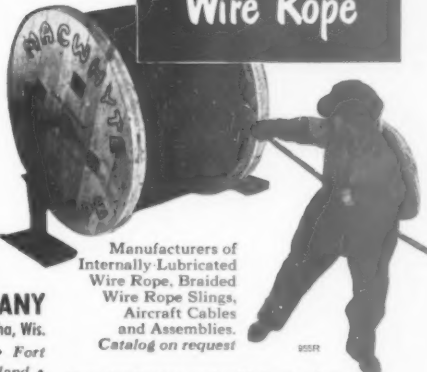
Mill depots • New York • Fort

Worth • Pittsburgh • Portland •

Chicago • Seattle • Minneapolis

• San Francisco • Los Angeles

Macwhyte Wire Rope



Manufacturers of Internally-Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies. Catalog on request

Our distributors and mill depots throughout the U. S. A. and other countries carry stocks for immediate delivery.

Fast Excavation AT LOW COST!



Great Flexibility

Sauerman machine can reach across a stream, pond, pit or stockpile or to top of hill and move material rapidly from any point within its cable radius. The radius can be extended as far as 1,000 ft. or more.

Write for Catalog

Completely illustrated book describing many typical installations. Our Engineering Department will gladly advise on your own problem.

SAUERMAN BROS., Inc.

530 S. Clinton St., Chicago 7, Illinois

This 24 cu. yd. Sauerman Power Scraper cuts deeply into hill of gravel and moves about 85 cu. yd. of material an hour to crusher. The scraper tail block is attached to a movable A-frame located on the top of the hill.

SAUERMAN POWER SCRAPERS

At sand and gravel screening plants, stone crushing plants, cement mills—in fact, wherever there are problems of excavating or stockpiling bulk materials—Sauerman Crescent Power Scrapers daily demonstrate their ability to dig and deliver large tonnages of materials at costs of a few cents a ton handled.

Operation and Upkeep Are Simple . . .

Operation requires only one man at the controls. Any workman is easily trained for the job. Power consumption is small. Installation and upkeep costs are low.





THIS BOOKLET MIGHT SAVE YOU MANY HOURS OF PRECIOUS WORKING TIME

Tells how to keep rotary kilns running when trouble occurs—either permanently or until replacement parts can be secured. Better still, it tells how to **PREVENT TROUBLE** through proper precautions in setting up kilns and by watching out for conditions which may cause trouble if not corrected. Twenty pages—fully illustrated. Free on request to any one who can use it to advantage. Ask for Bulletin No. 389.

Vulcan Iron Works
WILKES-BARRE, PA., U. S. A.

Ward as vice-president in charge of sales of the American Manganese Steel Division, with headquarters in Chicago Heights, Ill. Eads Johnson, Jr., has been appointed assistant vice-president of the southern wheel division. He has been serving as sales representative of the brake shoe and castings division. Donald C. Sheldon has been elected assistant treasurer and Kenneth A. Anderson has been named assistant secretary. James R. Shepard has been appointed western district works manager, with headquarters in Chicago, and Thomas J. Wood has been made eastern district works manager of the brake shoe and castings division, New York, N. Y.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed the following distributors for the Hydrocrane: The Porter Supply Co., Inc., Huntington, W. V., for the southern half of West Virginia; James W. Bell Co., Cedar Rapids, Iowa, for central eastern Iowa; Lyons Machinery Co., Little Rock, Ark., for central and western Arkansas; and Bode-Finn Co., Cincinnati, Ohio, and Dayton, Ohio, for southern Ohio, southeastern Indiana, and in the three northernmost counties of Kentucky.

Stoody Co., Whittier, Calif., announces that Amos Johnson has joined the field sales department and will assist distributors in Minnesota and the Dakotas. The following additional distributors have been named by the

company: Mobile Welding Supply Co., Inc., Mobile, Ala.; Morris, Wheeler & Co., Inc., Philadelphia, Penn.; Maine Oxy-Acetylene Supply Co., Auburn, Me.; The Alfred B. King Co., New Haven, Conn.; Fuller Supply Co., Inc., Utica, N. Y.; and Corp Bros, Inc., Providence, R. I.; also two foreign distributors, Manual Sigren, Santiago, Chile, who will cover the entire country, and Bandeira de Mello S. A., Rio de Janeiro, Brazil, who will represent the company in the central area from Bahia to the state of Santa Catarina.



Burt Powell



H. H. Howard

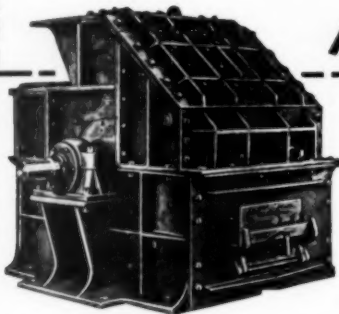
Caterpillar Tractor Co., Peoria, Ill., has announced the appointment of H. H. Howard as director of sales with J. J. Valentine and J. H. Mohler named as assistant directors. Mr. Howard was formerly general sales manager. Burt Powell, manager of the publicity and sales publications division, has been promoted to the position of assistant advertising manager. George E. Wennerly has been named assistant to W. K. Cox, advertising manager. Mr. Valentine, formerly assistant general sales manager, will have charge of eastern, central, western and governmental sales divisions. Mr. Mohler will administer the sales development division and sales training division along with two new divisions, sales engineering and market research. He will be succeeded by K. F. Ames as manager of the sales training division. J. M. Abbey, formerly a district representative of the central division, will assume Mr. Ames' position of assistant manager of the central sales division. W. N. Foster, assistant eastern division sales manager, has been named manager of the new sales engineering division, while L. J. Deyo, former assistant to J. J. Valentine, heads the market research group. Mr. Foster will be succeeded by C. K. McClelland, formerly a district representative in the central division.

International Harvester Co., Chicago, Ill., has appointed J. G. Wiegand and R. R. McKiel as sales engineers specializing in the sale of industrial power products to manufacturers.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has announced the appointment of C. A. Lapp & Co., Cleveland, Ohio, as sales representative in Cleveland.

The Timken Roller Bearing Co., Canton, Ohio, recently held open house simultaneously in its various plants in the United States and Canada to inaugurate the Fiftieth Anniversary celebration of the company.

HIGH EFFICIENCY REDUCTION for Your CRUSHING NEEDS with AMERICANS



From agstone to roadstone sizing, Americans offer the flexibility and rigid control of sizing—to make each specific reduction job more efficient—and more profitable!

For better agstone sizing, American ACS Hammermills are designed with a special center feed—to lengthen the travel of stone and give a higher ratio of fines. With the conventional front feed, minimum fines are assured. Easy external adjustments give the individual size control and flexibility to meet your changing market needs.

Three different hammer types are furnished to give the exact reduction you require. A. "Brute," for heavy. B. "Broad-head," for medium. C. "Splitter," for fine.

A. BRUTE

for heavy



B. BROAD-HEAD

for medium



C. SPLITTER

for fine



Write for your copy of "Better Stone Crushing."

American

Originators and Manufacturers of
Ring Crushers and Pulverizers

PULVERIZER COMPANY

1245 MACKLIND AVE.
ST. LOUIS 10, MO.

CONCRETE PRODUCTS

CONCRETE UNITS · READY-MIXED CONCRETE



Central-mixed concrete plant of
Killins Gravel Co., Ann Arbor, Mich.

A SECTION OF
ROCK PRODUCTS

"NO OTHER AIR-ENTRAINING CEMENT CAN EQUAL DURAPLASTIC"



"We have been making concrete silo staves, concrete pipe and concrete block for the past twenty years.

"Five years ago we began using Atlas Duraplastic Cement, and have used it for the majority of our work ever since. No other air-entraining cement, in our opinion, can equal Duraplastic."

*says Mr. J. R. Brick, General Manager,
Medford Concrete Company
Medford, N. J.*

Above is a recurrent opinion among concrete products manufacturers who use Atlas Duraplastic* air-entraining portland cement. For machine-made products, they find they can use a damper mix—one that's more cohesive, holds together better and feeds easily through machines. Finished units exhibit greater resistance to passage and absorption of water. For products such as block, pipe, brick, etc., these are outstanding advantages.

For superior concrete products at

no extra cost, use Atlas Duraplastic cement. It complies with ASTM and Federal Specifications and sells at the same price as regular cement. No unusual changes in procedure are required. Send for further information. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Des Moines, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*Duraplastic is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Co.

ATLAS DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

MAKES SUPERIOR CONCRETE PRODUCTS AT NO EXTRA COST



NBC SUMMER SYMPHONY CONCERTS—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—June to September

INDUSTRY NEWS

Corn Cob Aggregate for Concrete Block

EXPERIMENTS at the Michigan Agricultural Experiment Station conducted in cooperation with the U. S. Department of Agriculture show that corn cobs may find a new use as aggregate in the manufacture of concrete block. According to scientists, block made with corn cob concrete have a number of advantages. By using the coarse-ground cobs with sand and cement, the block are lighter in weight than most other block. Nails can be driven into the corn cob units and they do not readily conduct heat. Mixes are still being tested to determine the best proportions of water, sand, cement, and ground cobs. The latter must be wet before use or else will absorb so much moisture, that they will not attain desired strengths.

Concrete Units From Volcanic Cinders

ANGELUS CONCRETE BLOCK CO., Burbank, Calif., has added a volcanic cinder block known as Cinderlite to its line of block. The company currently is in the process of expansion. Additional storage space has been acquired and a second Besser Vibrapac machine has been installed. Edward Antonini and Filippo Fordellone own and operate the firm.

Block Plant Expansion

TUFFSTONE PRODUCTS CORP. OF NEVADA is producing lightweight concrete block, tile and brick at Reno in a variety of sizes and colors. Robert Lister is president of the firm, Harry

Gilbert is production manager, Robert W. Baker is vice-president, and Homer Hardy is secretary treasurer and sales manager. The company currently is constructing an addition which, when completed, will have a capacity of 7000 block per shift on a two shift per day basis. At present there are facilities for curing approximately 8000 block at one time, with approximately 12 hr. being required for the curing process.

Survey of Concrete Pipe Highway Culverts

AMERICAN CONCRETE PIPE ASSOCIATION has announced the availability of the "1949 Survey of Concrete Pipe Highway Culverts," and the availability of reprint No. 19, "Hydraulic Properties of Culvert Pipe," University of Washington. The association also has announced that some copies of the bulletin, "Durability of Concretes and Mortars in Acid Soils with Particular Reference to Drain Tile," are still on hand. The latter, published by the University of Minnesota, was written by Dalton G. Miller and Philip W. Manson.

Block Mend Crack in Levee During Flood

A CRACK caused in the levee along the Mississippi River by recent floods was mended by a barge load of heavy-weight block from the Louisiana Concrete Products Co., Baton Rouge, La. Each unit weighed 57 lb. and there were enough block in the barge to fill the entire crack. Louisiana Concrete Products Co. also manufactures lightweight building block.

Concrete Housing

MORE THAN 15,000 concrete homes have been built in the State of Indiana since the end of World War II. A. W. Rohlfing, Indianapolis district engineer for the Portland Cement Association, reports. Approximately 5700 concrete homes were built in the state during 1948 as compared with an average of 4800 during each of the two preceding years. Production of concrete masonry units showed an increase in Indiana during 1948, totaling the equivalent of 42,500,000 block, 8 x 8 x 16 in. In 1947 the comparable figure was 41,752,000 block, and in 1946 was 38,016,000.

MORRISON-KNUDSEN ready-mixed concrete plant at Boysen dam, near Thermopolis, Wyo., has resumed production following a recent fire.

PIERRE CEMENT PRODUCTS CO., Pierre, S. D., has been sold to C. C. Seachris by John Maher and Pat Feeney. Orrin Buum will remain in charge of operations.

ROBERT BLANK has opened a ready-mixed concrete plant at Platin, Mo.

AMERICAN TRANSIT MIX has announced plans for construction of a \$150,000 pre-mix concrete plant at Lewiston, Idaho. The pre-fabricated, all-steel plant will have a capacity of 100 cu. yd. per hr.

WAUKESHA CEMENT TILE CO., Waukesha, Wis., is constructing two concrete block buildings at an estimated cost of \$16,400 to be used for offices and employees locker rooms.

P. A. LEWIS SUPPLY CO., Hope, Ark., has moved its ready-mixed concrete plant and its sand and gravel and cement yard to a new location in the same city.

MERRILL STEELE has purchased the Albert Kluge and Sons concrete products plant and properties at Cherokee, Iowa. The company now is known as the Cherokee Concrete Products Co. and is continuing the manufacture of Kluge "square" block, concrete brick, reinforced concrete well curbing, reinforced concrete culverts, concrete septic tanks, and stepping stones. Gordon Steele has assumed active management of the concern.

BANTA & SONS recently constructed a new concrete block plant in Sidney, Mont., and now is producing block at the rate of 500 per day.

HIGHWAY CONCRETE PIPE CO., Mt. Sterling, Ky., has been granted a charter with \$20,000 common stock, and 100 shares no par preferred stock. R. J. Reynolds, Esther Clay and William C. Clay, Jr., are the principals.

PAUL C. RIEFLER has started the production of concrete block in Buffalo, N. Y. with a capacity of 4500 units per day.

BROADUS CONCRETE BLOCK & CEMENT WORKS, Broadus, Mont., has been reopened. J. P. Miller, proprietor, has announced.



Universal Concrete Pipe Co., Columbus, Ohio, recently furnished over 450 pieces of concrete curbing for construction of a retaining wall on a Columbus industrial job. Completed by the Austin Co., the wall, shown above, is 84 ft. long and varies in height from 5 to 12 ft.

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With

THE FONTAINE

"Auto-load"

Saves Block—Reduced handling to job means less broken or chipped block.

Less Trucks—No loss of time loading or unloading.

Figure your own Savings with this body.

**Mechanical Handling is
Your Answer!!**

Concrete Block and Brick Bodies now in Production — The result of twenty-five years experience in this field.

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STRESCRETE

—our new development for improved reinforced concrete construction—is ready for manufacturing and marketing by reputable firms under our licensing agreement. Into its development has gone many months of painstaking and costly research. STRESCRETE has been thoroughly tested and proven. We are now prepared to grant franchises for exclusive territories to forward-looking firms in other localities. STRESCRETE offers greater dollar volume—greater profits—for your plant. In addition, it offers to your customers a better, faster, more economical method of construction.

STRESCRETE FRANCHISES

... for exclusive territories are still available in some areas. For complete information write to STRESCRETE DIVISION, BASALT ROCK CO., INC., Napa, California.

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HERE'S GRAPHIC PROOF...

Pictured are two trucks ready to leave the plant. Each truck is hauling exactly the same volume of concrete. Value of STRESCRETE load (left) is \$825.00. Value of load of regular masonry building units (right) is only \$222.00. You get bigger unit sales... greater profit... and are able to utilize the full capacity of your plant, equipment and personnel when you manufacture and sell STRESCRETE!



HOW A STRESCRETE FRANCHISE WILL EXPAND YOUR MARKET...

A MORE NEARLY COMPLETED PRODUCT AT THE PLANT

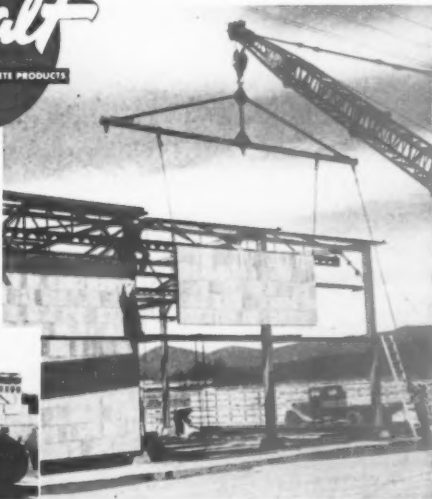
With STRESCRETE you'll be selling roofs, floors and ceilings and walls—virtually completed—instead of merely competing with other producers for the sale of standard masonry units for the walls alone.

MORE DIVERSIFIED USES

Used for roofs, ceilings and floors as well as walls and partitions, STRESCRETE Products offer a broader market, greater volume and more profit per sale... with less competition.

QUICKER SALES

STRESCRETE has added sales appeal... because it offers greater speed in construction, cuts down labor on the job-site... and produces sturdier, more durable, crack-free concrete structures.



CEMENT SHORTAGE

crippling

Your Ready-Mixed Operations

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FOR YOUR PROTECTION

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the B.R.C.S.B.* group!

**B.R.C.S.B. Group stands for the happy, untroubled, practical and far-sighted Ready Mixed operators who have added *BUTLER RESERVE CEMENT SUPPLY BINS to their plants.*

In this period of acute cement shortage and irregular deliveries, a substantial *reserve* supply of cement always on hand to tide over the Ready Mixed operator, is as comfortable as a good, fat bank account.

Whatever may be the type or construction of your existing plant, — whatever your production requirements, BUTLER has an auxiliary cement bin of a size and style best suited to your layout from the standpoint of economy and efficiency.

In many plants ground level storage is best; in others elevated or side attached bins provide

Above: a plant which combines Ready Mixed Concrete and Concrete Block production. The two main bins serve for either product and have a common materials handling system. The large reserve bin holds 2000 barrels of cement.

the most efficient handling of reserve supplies. In any case, BUTLER engineers are pre-eminently qualified to give you an answer that is precisely right for the conditions under which you operate.

So, for restful nights and untroubled, profitable days, — days without costly shutdowns, — take BUTLER'S recommendation and join the care-free B. R. C. S. B. Group.

Your inquiry will have an immediate answer.

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the truck mixer fleets that grow are Jaegers



because Jaeger dual-mixed, specification



concrete is acceptable on any and all jobs . .

Experienced ready-mix operators know that their \$200,000,000 a year business was built by furnishing a high quality product, mixed to close specifications, accurately controlled for slump, and delivered without segregation over long or short hauls.

The majority of successful plants — and the new plants that will prove successful — insure the acceptable quality of their product by using Jaeger Dual-Mix Truck Mixers.

Because they produce uniform higher strength concrete, with a larger daily payload average and lower cost of maintenance, more concrete is sold in Jaegers than by any other method. The Jaeger Machine Company, Columbus 16, Ohio.



Sizes 2-3 to 5½-7½ cu. yd., including all standard Truck Mixer Bureau ratings. Top or end loading type — as best fits your needs. Ask for Catalog TM-8.



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NEW STANDARD SIZE AIR COMPRESSORS UP TO 600 CFM
PUMPS UP TO 240,000 GPM • 2-SPEED HYDRO-HOISTS UP TO 100 HP

Here's the rugged profit maker you've waited for!

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LOW INITIAL INVESTMENT!**

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Capacity: 400 8x8x16 blocks per hour, making two blocks per operation.

Or: At the same rate will make any combination of blocks totalling 16x16, such as: 1-4" and 1-12"; 1-6" and 1-10"; 1-16"x16"; 1-8" and 2-4"; 4-4".

Uses any standard pallet for cored blocks. **FAST CHANGE-OVER** to any standard block in 30 minutes. Operates on low pressure air. Finger-tip controls. No skilled operator necessary. Quiet and easy on operator.

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Ruggedly constructed for hard and heavy use. All wearing surfaces quickly, easily, economically replaced. These, **PLUS** the quick change-over, give your plant a new versatility to meet production needs on short notice.

**OPERATES WITH ANY APPLEY
SKIP HOIST OR MIXER**

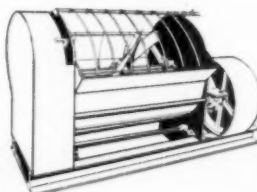
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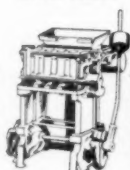
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Using Equipment To Merchandise Product

Dry-batch or pre-mixed concrete alternates at plant of Killins Gravel Co., Ann Arbor, Mich.

By DAVID MOCINE

FOUNDED by two brothers, Glenn and Ray Killins, Killins Gravel Co., Ann Arbor, Mich., is now under the active management of sons of the founders, David and James Killins. Upon assuming management of the company after their return from service in the recent conflict, the two cousins decided to enter the ready mixed concrete field—as an outlet for the company's sand and gravel, and as an added line of business for the company. Combined operations are located on the outskirts of this college town of 30,000 population, which is about 45 miles west of Detroit.

The weigh-batch station is located mid-way between the gravel plant and stockpile area, leaving a truck haul for sand and gravel from 100 to 250 yards. Overhead bins for cement and aggregates are supported on a reinforced concrete structure, with weigh-batchers directly underneath and a 2-cu. yd. tilting mixer on the next lower floor directly over a truckway under the plant. The plant output is delivered in the company's fleet of seven 4-cu. yd. non-agitating type concrete delivery units. Dry-mix and pre-mixed concrete also are sold at the plant and discharged to farm or contractor trucks.

Aggregate used at the ready-mixed concrete plant is dumped by truck to a 10-cu. yd. surge hopper for discharge via a pan feeder to a 24-in. conveyor belt, 100-ft. centers, which inclines



Overall view of plant showing 100-ft. conveyor, background, for elevating truck-delivered aggregate to overhead, 3-compartment bin with 75-cu. yd. total capacity. Bulk cement hopper and elevator, foreground. Cover picture shows plant fully enclosed

up to a three-compartment overhead bin of 76-cu. yd. total capacity with a swing-spout to distribute materials into the several bin compartments. The belt conveyor is powered by a 15-hp. motor through a V-belt driven speed reducer. Bulk cement is delivered by truck and discharged to a 5-cu. yd. hopper which forms the bottom of the totally enclosed boot of the elevator. The 65-ft. centers elevator delivers cement to a 50 bbl. overhead bin, with overflow being chuted to a ground storage bin of 400-bbl. capacity.

Three separate beam-scale weigh-batchers are used to proportion aggregates, cement and water. Cement and aggregate weigh-batchers discharge to a pants-leg chute with a flop-gate arrangement for diversion of material either to the 2-cu. yd. mixer or for delivery to trucks as dry-batch ma-

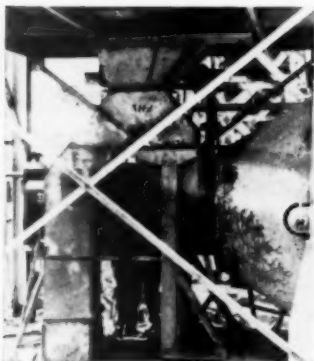
terial. To prevent vibrations from operation of the concrete mixer affecting readings on the weigh-batcher, the mixer is mounted on a reinforced concrete superstructure on a foundation entirely separate from the reinforced concrete foundation and steel frame supports for the overhead bins and weigh-batchers. Engineering and design service for this plant was supplied by Ayres, Lewis, Norris and May Co., Ann Arbor, Mich. A 2-cu. yd. surge tank has been placed below the mixer to receive mixer discharge. This surge tank has two important functions: being located half-way from the mixer to the truck level, it breaks the 8-ft. fall of the 2-cu. yd. charge of concrete from mixer to truck; and by allowing the mixer to discharge concrete when the proper mixing time has been reached without waiting for the spotting of a truck under the platform, it saves time and allows for better mixer control.

Maintaining Presentable Equipment

The company's fleet of seven 4-cu. yd. non-agitating type delivery units are mounted on four 4-wheel trucks and three 6-wheel trucks (the last with special tandem rear axles). Trucks are all kept spotlessly clean, as management of this company believes in the advertising value of neat equipment. All trucks of the fleet are painted the same color, with the door carrying the company name, address and telephone number; and on the body of the truck, in the form of a trademark, is the slogan "Central Mixed Concrete." Prior to the entry of this



Six of fleet of seven new non-agitating type delivery units. All units carry 4-cu. yd. bodies, but four are mounted on 4-wheel chasses and three are mounted on 6-wheel chasses



Pants-log chute below weighbatcher to divert material to mixer (right) or to truck



David A. Killins, Treasurer, left; Ray C. Killins, vice-president, center; and James D. Killins, secretary, standing in front of delivery unit. Note slogan: Central Mixed Concrete, painted on body

company into the ready mixed concrete business, no company in the Ann Arbor area used the pre-mixed concrete system, and so the slogan, in connection with local advertising, helps to bring to public attention the principle of rigid quality control.

Every morning before fleet operations begin, all truck cabs and non-agitating type bodies are sprayed with a thin coating of paraffin oil. This coating serves a dual purpose: it prevents concrete from sticking to the sides and bottom of the body, as well

as making the outside of the body and cab easier to clean after the day's work is completed. An experienced mechanic keeps the trucks in good repair, with drivers reporting to him every night on the condition of their trucks. The trucks are lubricated on regular schedule.

At the time of inspection, the largest single customer was the University of Michigan which has a large building program under way. A second large contract is with the City of Ann Arbor, to furnish all concrete

used in repair work on city streets.

Equipment Design

The pan feeder under the aggregate hopper, main conveyor idlers and tilting concrete mixer were all supplied by Smith Engineering Works. Overhead bin system and the three weigh-batchers are of Butler Bin Co. design. Non-agitating concrete delivery bodies are "Aircreters," manufactured by Hercules Steel Products Co., and mounted on Ford trucks;

(Continued on page 116)



Rear view of plant. Note separate structure for mounting tilting mixer that eliminates vibrations on weighbatcher floor

LIGHTWEIGHT AGGREGATE

From Expanded Slate

Southern Lightweight Aggregate Corp., Richmond, Va., uses one crushing, screening plant for processing slate as well as clinker

PRODUCTION of lightweight aggregate "Solite" from expanded slate was started in 1948 by Southern Lightweight Aggregate Corp., Richmond, Va., in a compact plant which utilizes the same crushing and screening units for reducing quarry-run material and also for sizing clinker as a finished product. Located about 50 miles from Richmond on a main line of the Chesapeake & Ohio Railroad, the plant site is adjacent to a slate deposit which is approximately one mile long, more than 300-ft. deep, and which varies from 150 to 400 ft. in width.

An average of 18-in. overburden is removed with a dozer, power shovel combination. Prior to selection of the present site, the company spent 15 months in extensive prospecting in both Virginia and North Carolina, with the aid of maps and other information available from the State Geology departments. Eighty-six deposits were tested for chemical composition and extent. In opening the quarry, a 50-ft. slice across the strike of the deposit was cut, and when the walls were reached a second similar slice was started, retreating away

By DAVID MOCINE

from the end nearest the plant. Chemical components of the slate are:

75 percent silica
19 percent alumina plus basic oxides
3.5 percent CaO and MgO
2.5 percent inert materials

A company-assembled, electrically powered 4-in. drill mounted on an automobile chassis, drives 30-ft. blast holes horizontally. Ten holes are usually fired per blast, using a hand magneto and simultaneous blasting. Due to the laminated character of the deposit, secondary blasting is held to a minimum. A Schram 105 c.f.m. gasoline-powered air compressor delivers air to one Ingersoll-Rand jackhammer required for secondary blast hole drilling. A $\frac{3}{4}$ -cu. yd. Northwest diesel-powered shovel loads two 3-cu. yd. end-dump Ford trucks for the haul of approximately 900 ft. from quarry to plant.

Material from the quarry is dumped over a grizzly at the plant to a 15-cu. yd. surge hopper for gravity feed to a

17- x 42-in. gyratory, set for 2-in. discharge. Minus 2-in. material from the primary falls to an inclined 30-in. belt conveyor, 100-ft. centers, which elevates it to a 4- x 12-ft. two-deck vibrating screen, with 1½- and ¾-in. mesh on the top and bottom decks, respectively. Oversize on the top deck, minus 2-in., plus 1½-in., is chuted to a 10- x 30-in. gyratory, set for 1½-in. opening. The method of using this same crushing and sizing plant for clinker to make a finished product and the apparent advantage in the use of two gyratories, will be brought out later. Both crushers and the screen are of Kennedy-Van Saun manufacture.

Crushing-Screening Section

Discharge from the secondary crusher is returned in closed circuit to the first belt by a 24-in. transfer belt, 90-ft. centers. Oversize on the second deck, plus throughs, fall to a 24-in. belt, 177-ft. centers, to be conveyed to a surge pile as kiln feed. The second deck of this screen has a definite function in the processing of clinker. Sized material from the 177-ft. belt falls to a 24-in. swing conveyor belt on 42-ft. centers, which discharges to a 500-cu. yd. surge pile.

This plant has been built on two sides of a small valley to take advantage of the natural contours of the land. The crushing-screening section has been erected on one side of the valley, and is separated from the kilns and clinker-cooling area on the opposite side by a railroad siding on the floor of the valley. The natural slope of the valley floor allows for gravity spotting of railroad cars to be loaded. A 177-ft. conveyor from the crushing-screening section bridges the valley, spanning the railroad tracks. All belt conveyors at this installation, with the exception of the kiln feeders, are of Barber-Greene manufacture.

Sized slate in the surge pile is fed by gravity to two 16-in. belt tunnel conveyors on 20-ft. centers which act as kiln feeders and are synchronized to kiln speed. They are driven by chains from the kiln power units. Two kilns, 6-ft. 3½-in. by 100-ft., are now in operation and two more are on hand for installation in the near future. All four kilns were formerly in operation at the Northampton, Penn., plant of Universal Atlas Cement Co. Both kilns have a 6-in.



Right background is secondary crusher receiving feed from three-deck screen to the left. Belt in center carries primary crusher discharge to screen

Harbison-Walker refractory brick lining; with one kiln having an additional 4-in. layer of Solite concrete poured-in-place over the fire brick.

It takes 30 minutes for material to pass through the kilns, which are inclined $\frac{3}{4}$ in. per ft. and revolve at a speed of $1\frac{1}{2}$ r.p.m. Kilns are driven by individual 30-hp. induction motors which are belt-connected to kiln drive gear boxes.

Coal for firing the kilns is delivered in gondola cars which are spotted on the siding that bisects the plant. A $1\frac{1}{2}$ -cu. yd. Wiley 30-ton stiff-leg crane unloads minus $\frac{3}{4}$ -in. coal, placing it in a stockpile near the primary crusher. This crane, with an 80-ft. boom, is located on the crusher side of the valley and has three major uses in this compact plant: unloading coal, transferring coal to the pulverizer hopper as needed, and feeding cooled clinker to the primary crusher.

One Pulverizer Serves Two Kilns

A 5- x 6-ft. Kennedy-Van Saun ball mill coal pulverizer is located between the two kilns at their discharge end. This coal pulverizer serves both kilns and is fed from the 20-cu. yd. hopper mounted above. Feed from the hopper to the pulverizer is controlled by a disc feeder, activated by an electric eye located in the pulverizer. This method of controlled feed is credited by J. W. Roberts, president of the company, with large savings in both time and money: "In eleven months of operation, no down-time of the mill for replacement of balls had been



Upper right is primary crusher charged by truck with slate from quarry or with expanded slate from cooling pile, extreme left, by stiff leg derrick, center. Railroad car, background, is spotted under finished aggregate loading chute. Conveyor across background transfers sized slate to kiln feed pile

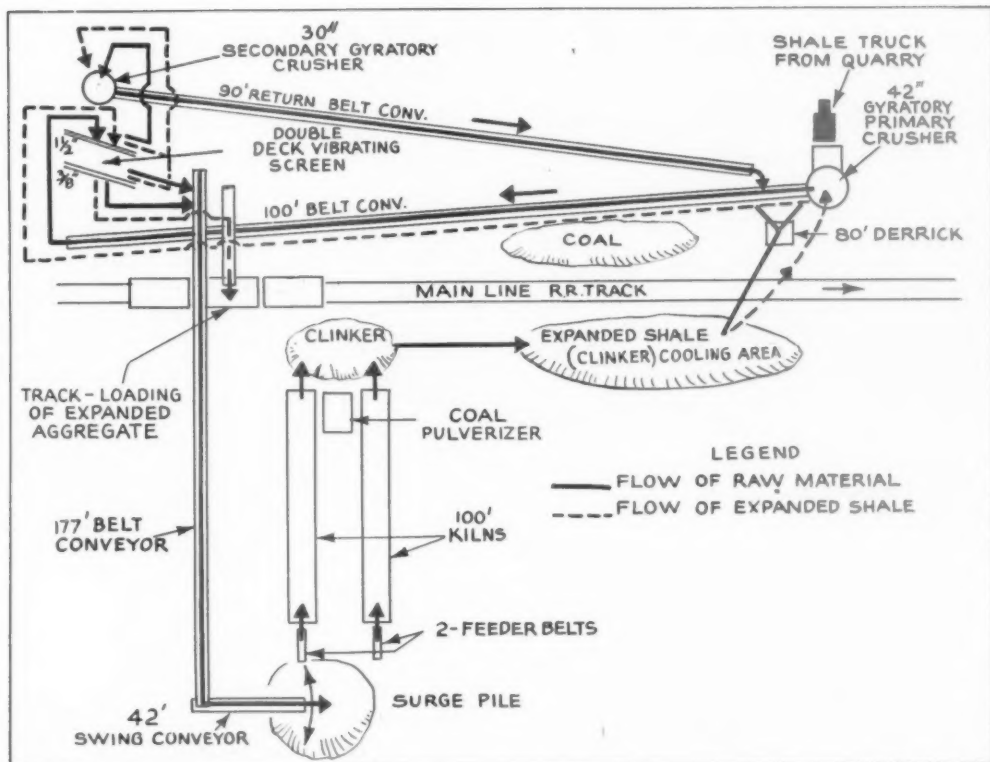
experienced. This is due to the fact that the mill always has sufficient coal present to cushion the fall of the steel balls." This same factor also lengthens life of mill liners.

Using 1- and 2-in. balls, the mill has a capacity of 5600 lb. of pulverized coal per hr. reduced from minus $\frac{3}{4}$ -in. feed to 85 percent passing 200-

mesh. The mill handles coal up to 15 percent moisture and is powered by a 50-hp. direct-connected Westinghouse motor. Pulverized coal is forced into either or both kilns by one 60-in. fan through a pants leg chute arrangement. Controlled feed to the coal pulverizer is reflected in regulated inflow of coal into the kilns, which



Discharge end of 177 ft. conveyor from crushing plant, center, which discharges to swing conveyor which spreads sized slate over 350-cu. yd. surge pile area for kiln feed. One of two kilns lower left, with feeder belt right end. Background: Clinker (expanded slate) cooling area. Note railroad cars immediately behind clinker area



Schematic flow plan of plant. Crusher-screening station located on one side of valley and kiln, clinker storage area on opposite side. Two phases of operation connected by 177-ft. conveyor belt bridging railroad tracks at finished material loading point. Two additional kilns are on hand for future installation

are fired to a maximum temperature of 2600 to 2700 deg. F. Fuel ratio at this plant is approximately 375 lb. coal per cu. yd. of finished product. It would be possible to expand the shale even more with a resulting better fuel ratio, as measured by volume, but the aggregate would not have sufficient strength. Two cubic yards of expanded aggregate are obtained from each cubic yard of raw material.

Expanded slate is chuted to a common stockpile between the kilns at the discharge end. Partially cooled clinker is moved from this first pile to a large cooling area with a capacity for several hundred cubic yards, by the crane mentioned previously. An hydraulically controlled CleTrac dozer on a crawler-mounted tractor operates on top of the storage area pile, spreading and moving the material forward to allow better cooling. From the stockpile cooling area, expanded slate is moved to the primary crusher by the clamshell at the same point where quarry trucks dump.

A special hot-material belt is used to receive the primary crusher discharge, for, when processing clinker, it is often still quite hot. When operating as the finishing plant, the same

flow is followed as when crushing and screening raw material; the only change being made in the opening of the secondary crusher and the switching of two flop-gates. In processing expanded clinker, the secondary crusher opening is changed from 1½ in. to ¾ in. Oversize over the top and second decks of the screen, 1½-in. and ¾-in. mesh, respectively, is chuted to the secondary crusher, with throughs from the bottom deck, minus ¾ in., being chuted directly to hopper-bottomed railroad cars. When occasion demands, mesh sizes are changed on the bottom deck through a range from ¾ to ½ in.

Using one crushing plant, capacities of various machines in the entire operation have been so computed that by operating the quarry on an 8-hr. day, 5-day week, sufficient slate can be crushed and sized to operate the kilns 24 hr. per day on a 7-day week. During the time that the quarry is not operating, the crushing plant has more than enough capacity to process all slate expanded by the kilns in 24 hr. The two large surge stockpiles located in the plant flow serve to keep the plant operating full time.

Due to the capacity for finished material processing (1½ hr. are required to load a 70-cu. yd. railroad car), storage of finished material is not necessary at this plant. In place of finished raw material storage, the clinker cooling pile fills the same need. Present capacity of the plant with two kilns is 200 to 300 cu. yd. of finished material per day.

A straight-line gradation of finished product is obtained by the use of two gyratory crushers which permits shipping of product in only one rail car, rather than several sizes in several cars (or blending), according to Mr. Roberts. This straight-line gradation of sized, expanded shale is in the range of 10 percent passing 100 mesh and 100 percent passing ¾ in. Sales are largely to concrete block plants and ready-mixed concrete plants. An effort is made to sell only to accredited companies so that the lightweight aggregate, Solite, will become identified in the public's mind with quality merchandise. T. B. Hartless, director of engineering and research for the company, services new accounts checking mixes, compressive strength of con-

(Continued on page 116)

Diversified Line of Products

In addition to ready-mixed concrete and concrete block, Albany Concrete Products Co. produces many specialties including concrete septic tanks, steps, posts and flag stones

IN 1941 WHEN J. G. MARBURY, vice-president and general manager of the Albany Concrete Products Co., Albany, Ga., opened his concrete products plant, his total investment was \$21,000. He had two small block machines, three wooden steam kilns, and an office, all in the same structure. Today his plant and yard cover several acres, with most of the ground paved, and he has a block plant, a specialty plant, ready-mixed concrete batching plant, a creosote treating plant, a large, well-stocked warehouse that carries about everything a concrete contractor could possibly use, a neat, modern office and a busy, efficient, and courteous staff.

The little plant with which he started, after some enlargements, is now used as a specialty plant where pre-cast steps, septic tanks, marker and other posts, flag stones, etc., are manufactured. In this same building, there is a complete shop for making sheet metal and wooden forms that are used for the special items. If, for example, an order comes in for a special type of post, wooden forms are made, and used until they are worn out. Any excess posts cast are stored in the yard and sold to the first buyer.

Septic Tanks

The manufacture of septic tanks plays a large part in the specialty plant. Septic tanks for a conventional dwelling are pre-cast, but if a larger

By WALTER B. LENHART

unit is wanted by a customer, the forms are made in the shop and the necessary concrete poured at the installation site, using one of a fleet of four 3-cu. yd. Jaeger ready-mix trucks, all of which are mounted on Mack trucks. Two are high dumps and two are horizontal dumps. Thus, Mr. Marbury's specialty business plays a part in the sales promotion and development of his ready-mixed concrete business.

Septic tanks for smaller dwellings are 3 x 6 ft. long and 5 ft. high, inside dimensions. They have 2-in. walls and with the lids (three in number) weigh about 3500 lb. The lids each have three reinforcing rods in them, are 3 in. thick and each lid has a lift-hook cast in the member. The tanks in the specialty plant are cast upside down. First a collapsible steel form is assembled. This is a series of bolted sections with one corner unit being tapered. When the bolts are removed from the section, a light tap loosens it and the corner section slides out, and the rest of the form can then be easily removed. After the steel inside form is assembled in the inverted position, a cage of reinforcing wire is put around the metal core and, at each end a "U"-shaped piece of $\frac{3}{8}$ -in. steel is tied to the cage. The loop of

the "U" goes around the hole in each end of the septic tank and strengthens the tank at that point to insure non-breakage during handling. The outer form of the septic tank is of plywood and made in the company shop. The concrete is poured into the form using one of the high-dump ready-mix trucks.

After steam curing for 24 hr., the



Waste reinforcing wire is used up in making pre-cast flag-stones



Collapsible steel form for inside of septic tank, background, and corner of finished tank, foreground



Latest addition to the concrete products plant is this high-capacity, automatic block machine

form is tipped over onto eight old truck tires that are piled two on two. This cushions the fall when the form, and tank, is placed on its side. Then the workmen loosen the bolts and remove the steel forms from within.

After seasoning in the yard the septic tanks are hauled to the installation site by a specially designed truck. This truck has a chain block on a crawler unit, the whole assembled on the deck of a flat rack International chassis.

The production of septic tanks at this plant has developed the interest of various school organizations, and recently about 60 visitors from the sanitary school at Columbus, Ga., visited the plant.

Block Plant

The heart of any concrete products plant is the block manufacturing equipment and during January of 1949 the company installed a late model Lith-I-Block machine. This small, compact unit is turning out 3500 block per 9 hr. day. It is a semi-automatic machine and makes two of the standard eight's per cycle. The pallets are flat steel, measuring 18 x 18 in. The machine takes up very little floor space (approximately 5 x 10 ft. by 10 ft. high, including a steel hopper over the machine.) The mixer here is a 27-cu. ft. Stearns unit and it dumps to a 27-cu. ft. skip of the same make. The mixer is mounted at floor elevation and aggregates are batched to it by a home made volume batcher. Cars unload to a bucket elevator at the block plant, which elevator delivers aggregate to a two-compartment bin over the main assemblies.

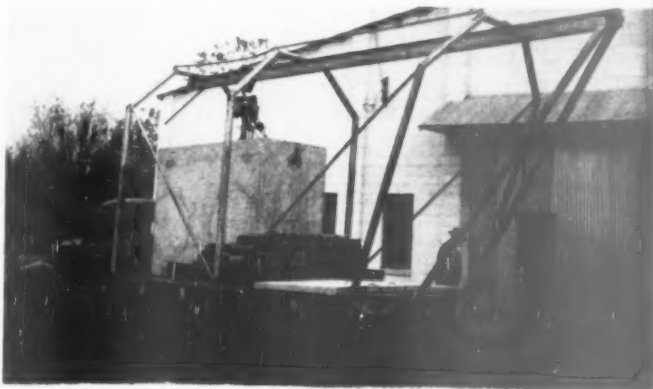
The Lith-I-Block machine employs, first, vibration from two unbalanced shafts, one on each side of the mold box. Also, a cage inside the mold box distributes the concrete over the form and at the same time helps densify the concrete in the form. Later, pressure in the form of several light taps from the tamper bar with a final heavy blow from this same tamper bar brings the



Workmen demonstrating easy erection of concrete steps



Port of the staff of Albany Concrete Products Co., left to right: J. G. Marbury, vice-president and general manager; B. H. Holland, office manager; L. L. Dorman, chief mechanic; Mrs. N. L. Cochran, bookkeeper; Anthony Sesco, office salesman; W. E. Bland, foreman and T. T. Gooch, hauling contractor



Menorah hoist mounted on truck for handling of septic tanks on the job

block down to proper size. The machine is air-oil hydraulically operated using a Quincy compressor that uses a 15-hp. motor.

In the block plant are four steam kilns with space for 3000 block. This capacity is to be increased to 3700 block in the near future. A Truck-

Man lift truck is used and several Yale and Towne hand trucks are available for handling racks. The paved yard is being enlarged to keep not less than 100,000 block on hand at all times so that fully aged and cured block only will leave the plant. Steam for all the kilns is generated by a wood-fired boiler. The kilns are open at both ends.

Sacked cement is unloaded by contract at the rate of 1c per bag. The bags are handled by piling 40 on a wooden pallet. A building is soon to be constructed here so that cars can be unloaded and the bagged cement kept at a sufficient height so as to facilitate truck loading.

Specialty Items

Another important item in the specialty section is the production of precast steps. These sell for less than what it would cost to make similar ones of wood. Yellow pine in the Georgia area usually rots out in a few years. The steps are made in 4-, 5-,

(Continued on page 116)



One of fleet of transit-mix trucks, with plant building in background

Compact Ready-Mix Batching Plant

New plant features automatic controls that make it possible for one man to operate entire installation of Azusa Sand and Rock Co., Pomona, Calif.

THE AZUSA SAND AND ROCK CO. recently placed in operation a new ready-mixed concrete plant at Pomona, Calif. Pomona is in the heart of the citrus and vineyard area of southern California and is about halfway between Los Angeles and San Bernardino. The parent company has its new sand and gravel plant at Azusa which is about 12 miles from Pomona and all the aggregates used at the new plant are trucked there in company-owned trucks. (A description of the sand and gravel plant appears in the February, 1947, issue of ROCK PRODUCTS.) The gravel plant was one of those visited by the members of the National Sand and Gravel Association during the Los Angeles meeting.

The new ready-mix plant is an all-steel structure, neat in appearance and is provided with automatic controls to the extent that one man will eventually run the entire plant. This means that the operator from his platform will be able to deliver aggregate to any service bin in the main structure, attend to all the details of batching as well as control cement handling.

At the new plant, aggregate delivery trucks drive up a low ramp to the top of the truck storage hoppers. There are six of these hoppers with a double compartment for sand. They are all covered with 75-lb. steel rail grizzlies, the rails on 6-in. centers, and the trucks do not have to back into dumping position as the runway is

Truck-delivered cement is stored in bin to left, while live aggregate storage is to right. Belt conveyor from right elevates aggregate to batching plant



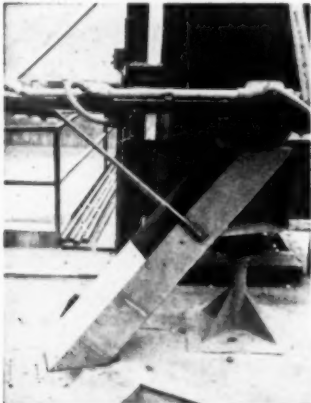
There are 14 gates, operated by air rams similar to those seen here, in the reclaiming tunnel under the ground storage aggregate bins

ing the bins over the batcher. American Rubber Co. belting is used.

At the top of the plant a swivelled spout is provided that discharges to any of the bins and this spout is connected to a 1-hp. U. S. synchro gear motor through a chain drive so that the operator can set the spout to any desired bin. Bin-Dicators are provided on the bins so that the conveyor system automatically stops when bins are full. The inclined conveyor is a Barber Greene unit and the tunnel conveyor is of Stevens Adamson manufacture.

In the batching plant a Hardy scale is used that is provided with five beams and has a 2½-cu. yd. hopper. Water is metered through a Style 3, 4-in. Trident Neptune Meter with a measuring tank available as a standby. The aggregate and cement gates

(Continued on page 117)



Swing spout at top of plant for directing flow of aggregate to proper bin is operated electrically and by remote control

open at both ends with suitable ramps provided. Each compartment holds 80 tons live storage. The bins hold paving gravel, 1½ in., two for sand, ¾-in. gravel, and pea or No. 3 crushed gravel (optional). The bins are all in a line and underneath is a concrete-lined reclaiming tunnel. The tunnel under the truck bins is open at both ends. Each bin is roughly 12 ft. x 20 ft. in top area. In the tunnel are 14 air-operated gates that are arranged in seven pairs of quadrant-type gates that are each approximately 42 in. long with the long axis of the gate paralleling the reclaiming belt conveyor. All the gates are controlled from the operator's platform at the batcher through Noble air cylinders. A small Ingersoll-Rand air compressor is mounted nearby to supply air for the gates. A 24-in. horizontal belt conveyor is located under the gates, and unloads to a longer, inclined belt serv-



Motor of 1-hp. rating that operates the swing spout is mounted on end

Concrete Masonry in Florida

THERE ARE two sections of the United States that vie with each other in many ways and their respective Chambers of Commerce are always looking for opportunities to outdo the other. These two states are California and Florida and naturally their competitive spirit springs from their ideal climates. In the concrete products industries they are likewise competing with each other for leadership. Either state can afford endless numbers of excellent examples of outstanding concrete masonry plants, masonry uses and the development of new processes and items to manufacture. In our humble opinion it is about a stand-off as to which is the most advanced on the subject of concrete masonry.

Florida is handicapped by lack of a cheap lightweight aggregate and California, on the other hand, has many kinds and types to draw on: pumice, perlite, vermiculite, artificial lightweight materials, etc. However, Florida does a good job with its available aggregates, mostly limestone, limestone sands, etc.

In Florida one is impressed with the great numbers of concrete buildings of all types that are being constructed. In traveling the length of the state we could have taken literally hundreds, possibly thousands, of pictures of buildings going up of concrete masonry units. Most of these were in the one story class. Some were of two stories and larger, but all were neat and a credit to any community. Many smaller buildings had flat or shed roofs with considerable eave overhang. This is a cheap and easily constructed type of building and is pleasing to the eye. A number had concrete floor joists with colored concrete floor tile that was especially attractive. There seemed to be a tendency to build the structures at ground level and then fill the interior with sand or earth to a depth of 2 to 3 ft. On top of this interior fill would be placed the precast concrete floor joists with supports coming from the end and from the fill. Precast concrete steps, in many

cases, would lead to the first floor levels.

Another practice of which we approve is the use of three to four reinforcing bars at the corner with the core filled with concrete. This is common practice, as many know, because of hurricanes, while in California, similar reinforced construction is required for earthquake resistance. In some of these types of structures the corner was built outward in the form of a pilaster and reinforced and cored with concrete. At the same time the lintels would be extended across the entire top of the building and this poured-in-place with concrete along with considerable reinforcing. Thus the building walls would be tied together in a solid, non-movable wall that gave the building greatly added strength. In addition the pilaster ef-



These pre-cast concrete street markers have obvious advantages

fects at the corners and of the lintels broke the monotony of a straight concrete masonry wall, thereby adding to the pleasing appearance of the structure.

Concrete block made from the oolitic

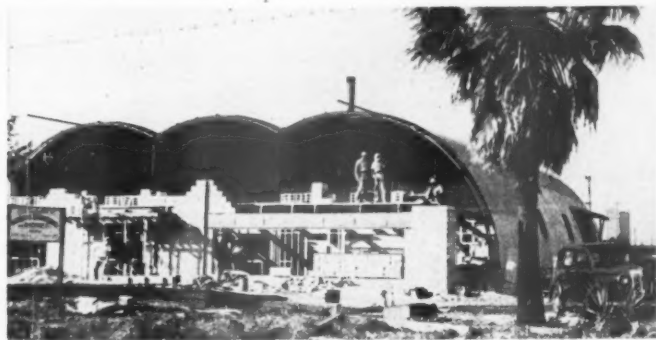


A group of two-story apartment buildings being erected in the Tampa, St. Petersburg area of concrete block construction. Note the cast-in-place lintel being placed across the top of each building

and other limestones in Florida have a rather white appearance and are of smooth texture for the most part, which add to their attractiveness when placed in a wall. Many devices are used to vary the appearance of the block, from the so-called "Arizona Dobe" block at one extreme to the use of smaller units. However, the standard 8's are very popular in Florida. Most of the homes are furred on the inside and plastered or lined. The exteriors are about equally divided between the stuccoed, or painted, and the unpainted types. "Arizona Dobe" is the name given to a small type of block made from ordinary concrete. When this wet block is taken from the machine it flattens out on the pallet giving it an irregular surface appearance and is not unlike the adobe used in the Southwest. It is used to break up the straight walls and is used mostly in corner sections of the buildings.

Concrete units in Florida using the oolitic limestones for aggregates require possibly a little less cement than ordinary hard aggregate blocks to obtain given strengths, since the limestone itself has some bonding properties. Very few of the plants in Florida use steam-curing kilns as the concrete made from oolitic limestone aggregates seems to gain strength fast enough to make the units easily handled after being on the rack for 14 to 24 hr.

In one community we observed pre-cast concrete street markers. These were about 30 in. long and 6 in. thick and above the ground some 12 in. or more. They were cast in the form of an "L" with the name of the street printed on each leg of the "L." It made a very serviceable and easy-to-locate street sign and, in our opinion, many cities could throw out their old out-moded post-type signs that are hidden most of the time in the trees, and use this ultra practical type of road marker.



An industrial building that features a series of quonset huts with a common concrete masonry front

Manufacture of Concrete Shingles

Mass production methods in England described;
concrete shingles in various colors manufactured
for use under extremes in climatic conditions

THE ART of making concrete roof shingles is an old industry; but it is only during the last 10 to 12 years that improved techniques have enabled the industry to become mechanized to produce shingles in mass quantities to meet competitive prices.

The change from hand to modern machine production has been a gradual process, due chiefly to the conservative attitude of the architect, builder and householder who, at first, were unwilling to concede that a shingle made from cement mortar could be the equal of the traditional roof cover, be it of clay, slate or wood. But continuous research and consequent improvements in the quality of the materials and in manufacturing methods have been rewarded by the complete breakdown of this prejudice and now, in many European countries, the annual sale of concrete shingles runs into astronomical figures.

Since the end of the late war, the production of concrete shingles has received a further impetus due to the shortage of coal and labor; it has been established that the amount of coal required for a finished cement shingle is only a little over one-third the amount required for a finished clay shingle. This consumption of coal in the case of concrete shingles includes the quarrying of the stone right through the cement and shingle manufacturing processes, including heat, light and power.

Among the leading concrete shingle machinery producers are Messrs. Pegson, Ltd., of Coalville, Leicestershire, England, who have been manufacturing concrete roof shingle machines and building plants for over 20 years. The continued popularity of their machines is due to soundness of design based on past experience, and continuous research into the needs of the industry, resulting in the development of units capable of high outputs and requiring a minimum of maintenance.

It was past experience which led Pegson, Ltd., to produce single-purpose machines—that is, units which produce one type of shingle only, to the customers requirements, instead of a multi-purpose machine of low output. At present, three types of machines are in production (each of which conform to the relevant British Standard Specification):

1. Plain or Brossley shingle; size, $10\frac{1}{2} \times 6\frac{1}{2}$ in. Output per day: 32,000.
2. Interlocking or Marseilles type

By W. L. JAMES

shingle; size, 15×9 in. Output per day: 16,000.

3. Pan or Dutch shingle; size, 15×9 in. Output per day: 16,000.

Production Methods

This high production rate needs special complementary equipment to enable the output to be handled efficiently with a minimum amount of labor. The following description of the operations of a plant which produces the interlocking shingle will be of great interest:

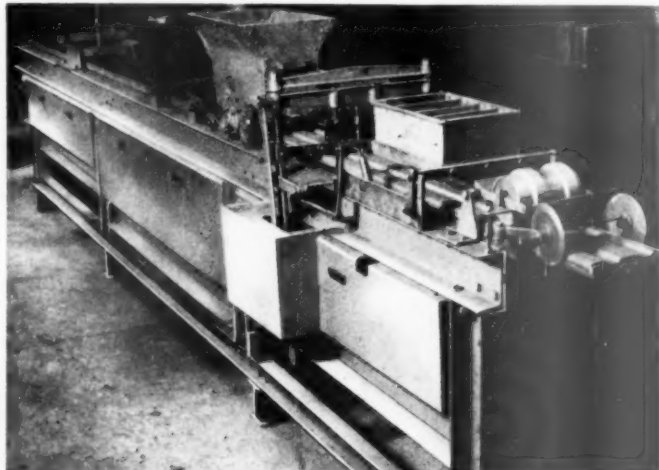
A special concrete mixer with a loading skip is mounted above the machine and is designed to handle the semi-dry mix required in shingle making. This machine is known as a counter current mixer because the pan turns in one direction and the eccentrically mounted mixing star turns at a faster rate in the opposite direction. In addition to the mixing blade, a special kneading roller, which is self-adjusting for height, is also attached to the mixing star and effectively prevents the formation of balls of cement and/or aggregate, which is a condition frequently met with in semi-dry mixes. The combined movement of the mixer components insures high

production of a mix that is absolutely homogeneous, and which is necessary to success in manufacturing shingles.

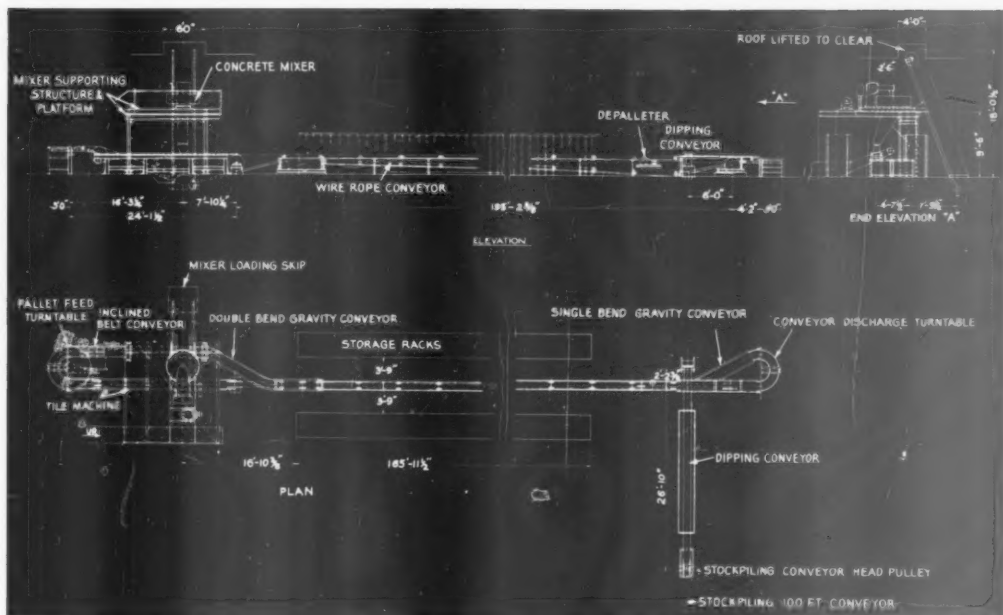
The batch is discharged by way of a chute to the mortar box of the tile machine. Pallets, of cast iron or aluminum alloy, are fed into the machine where they are first sprayed with oil and then conveyed by a short belt conveyor to the propulsion disc, which pushes the pallets continuously through the machine at a uniform rate of 2000 per hour.

The pallets move along a horizontal and renewable track, first passing under the mortar box. A star shaft mounted inside the mortar box feeds the concrete down on to the line of pallets, which then move under an adjustable shaped roller turning at the same surface speed as the pallets are moving through the machine, and the concrete is roughly shaped into shingle form. The shingles then pass under a stationary adjustable smoothing knife of special wear-resisting steel.

The smoothing knife compresses the roughly formed concrete into a dense mass of the correct shape and thickness; at the same time smoothing the surface to present an almost impervious finish to the elements. At this stage the concrete forms a continuous ribbon superimposed upon the pallets. Next, a special guillotine combined



Concrete shingle machine with a capacity of 32,000 plain shingles per 8-hr. day



Layout for semi-automatic plant to produce 16,000 interlocking concrete shingles per 8-hr. day

with a nail hole punch, operating at predetermined intervals, cuts the concrete into sections of the correct length, each section coinciding exactly with the pallet underneath.

The pallets then approach the discharge end of the machine and on each is a perfectly formed shingle with a smooth finish. In Europe, where sandfaced finish is favored, a special sanding device coupled with a freely hung roller deposits and rolls sand and color into the surface.

Handling Shingles

From the discharge end of the machine, the pallets pass on to a wire-rope conveyor, the speed of which is slightly greater than that at which the pallets pass through the machine. This difference in speed separates the individual pallets, leaving a space of about 20 in. between them, to facilitate handling. This conveyor, which is about 200 ft. long, runs between two sets of racks into which the pallets are transferred. Thus, at the end of an 8-hr. day, 16,000 pallets and shingles have been transferred to, and completely fill, the storage racks.

The transfer of pallets carrying freshly made shingles from the main conveyor to the storage rack and the transfer of pallets with 24-hr. old shingles proceed simultaneously by the use of two labor gangs. The pallets with the 24-hr. old shingles proceed along the main conveyor to the end farthest away from the machine, where they pass over a special depalletter, which loosens the shingle on the pallet and permits it to be removed by

hand. The pallets are transferred by means of a turntable and gravity conveyor to the underside of the wire-rope conveyor and commence their journey back to the machine; at the head of the conveyor nearest the machine they are transferred by gravity and belt conveyors to another turntable which feeds them back into the machine. Thus the pallets travel in a continuous circuit.

Concrete shingles, when taken from the pallets, are transferred manually on to the second conveyor running at right angles to the main wire-rope conveyor, and pass through a dipping bath containing a special solution designed to minimize efflorescence. From the bath, the shingles are automatically transferred to a 100-ft. long stockpiling conveyor; a continuation of the dipping conveyor in the same straight line.

Shingles should cure in the outside stockpile for at least 10 days before application to a roof. Materials required for the manufacture of concrete shingles are a good clean sand, containing not more than 3 percent foreign matter and all passing a standard 8-mesh screen; the cement is of the commercial rapid-hardening type and the mix is 3 to 1, with a water-cement ratio of 0.4. On cold days it is the practice to use an accelerator such as calcium chloride solution, not in excess of three percent by weight of cement. A labor force of 15 including a foreman and mechanic is required to operate the plant and turn out some 16,000 shingles per 8-hr. day.

Advantages

In America, where colored cement sprays are readily obtainable, an attractive range of colored shingles can be offered to prospective purchasers, to whom the following advantages may be quoted:

1. Durability of concrete shingles is such that they are virtually everlasting, withstanding extremely cold and tropical conditions equally well.
2. They possess a high degree of strength and do not warp or laminate.
3. They can be colored to harmonize with existing surroundings.

The wide range of colored pigments now commercially available permit an architect to specify and obtain shingles of almost any color. From the manufacturing angle, shingle production is profitable; and since aggregate and cement are usually available in most parts of the country, it is possible to erect plants near to important building centers and so obviate expensive transportation over long distances. Further, modern concrete tile plants are extremely reliable and the waste during the course of manufacture is extremely low, being very much lower than in the clay or slate shingle industry.

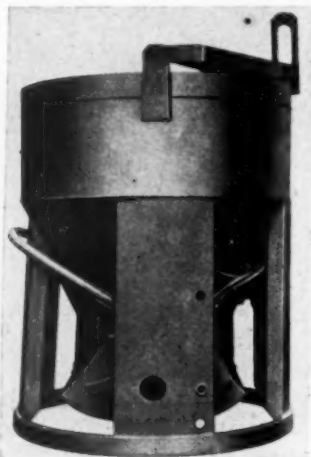
Gravel Company Dissolves

BARNES SAND AND GRAVEL Co., an Ohio corporation, has, by resolution of its shareholders, elected to dissolve and wind up its affairs, and a Certificate of Dissolution has been filed.

NEW MACHINERY

Concrete Bucket

C. S. JOHNSON Co., Champaign, Ill., has developed a Lo-Slump concrete bucket in 2-, 3-, 4-, and 8-cu. yd. sizes. Designed for heavy-duty require-



Concrete bucket for heavy-duty requirements

ments, the unit is said to satisfactorily discharge mass concrete with cement content as low as 2 bags per cu. yd. and slumps down to $\frac{1}{2}$ in. using 6 in. aggregate, depositing the mixes without segregation.

Features listed by the manufacturer are an extra large discharge opening with a fully controlled double clam discharge gate that can be opened manually or by compressed air; and completely automatic action when operated by air, with bucket gates closing as soon as the supply hose valve is released. To prevent segregation when handling mass concrete a hinged bail has been provided. The bail link stands vertically and is slotted to give it considerable vertical hooking range. The bottom slopes above the short cylindrical discharge section are approximately 68 degrees. On discharge a 42 in. dia. center opening is said to prevent arching of the concrete, and segregation is prevented by folding action of the concrete flow from the center of the bucket. The 6-ft. dia., 4-cu. yd. size weighs 4000 lb.

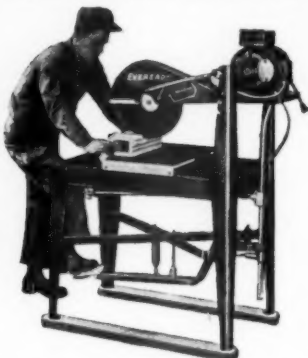
Pallet-less Hydraulic Load Handling Forks

THE BUDA Co., Harvey, Ill., has announced a line of pallet-less hydraulically-operated load-handling forks for lifting brick, block, boxes and bags. The forks are designed to fit all models of the company's fork lift trucks. Outstanding feature of the gripping forks is the positive gripping of load until the load weight is re-

lieved, the manufacturer points out. The forks come in three main styles; two forks for holding the sides of a barrel or a unit load of package goods, 4 rubber padded forks for gripping the bottom tiers of brick as illustrated, and four semi-curved forks for lifting two rows of bags.

Masonry Saw

EVEREADY BIKSAW Co., Chicago, Ill., has made available the Eveready Brik saw which features both wet and dry cutting, instant portability, and streamlined design with rugged construction. Cutting head height can be adjusted in 4 seconds for widely different size materials such as quarry tile, brick, partition tile and block,

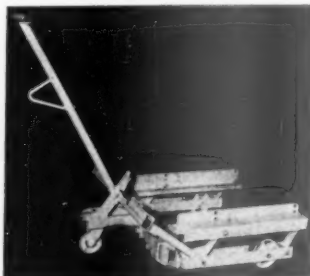


Masonry saw with quick adjustment features

the manufacturer states, and the cutting head can be re-set at any desired angle with a light upward tilt of the foot treadle. Cutting speed for concrete block is listed as 19 seconds. Brik saw blades fit every make of masonry saw.

'Tote Pan' Lift Truck

LYON-RAYMOND CORP., Greene, N. Y., has developed a "tote pan" lift truck adjustable in width and lowered height allowing it to be used with most



"Tote pan" lift truck which can be adjusted in width and lowered height

standard tote pans ranging in width from 8 to 24 in. According to the manufacturer, width of the truck is adjusted by loosening eight set screws and contracting or expanding the telescopic frame as required. Lowered height is changed by raising or lowering the side plates which are fastened by four bolts.

Two styles are available—a narrow model designed to handle tote pans from 8 to 16 in. wide, and a wide model designed to carry pans from 16 to 24 in. wide. Lowered height of the forks can be adjusted from $2\frac{1}{2}$ to $7\frac{1}{2}$ in. Forks are 22 in. long, automatically lock in the raised position, and are released by a pedal arrangement. Loads up to 1000 lb. can be elevated by a single downward movement of the towing handle, it is stated.

(Continued on page 113)



Pallet-less load handling forks

BLAW-KNOX

BATCHING PLANTS

REALLY

CUT CONCRETING COSTS

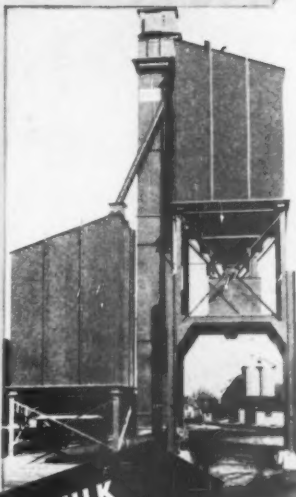
HERE'S a complete line of portable batching and mixing plants that will keep your fleet of trucks moving all the time. Big capacity for aggregates and cement means there's never any waiting for the crane to catch up or for spotting cement cars for unloading. Twin batchers, and choice of manual or automatic controls for Water Weighing Tanks, electrically operated discharge gates on bulk cement plants are only a few of the features that assure fast, accurate batching.

Capacities of aggregate plants range from 100 to 120 tons in two, three or four-compartment styles, bulk cement plants of 300 and 400 barrel sizes with combination arrangements to double these capacities.

The flexibility and portability of Blaw-Knox batching and mixing plants provide the solution to ready mixed concrete operations, central mixing plants or concrete products manufacturing problems. See your nearest Blaw-Knox distributor for details.



**PORTABLE
AGGREGATE
BATCHING
PLANTS**



**BULK
CEMENT
PLANTS**



**CENTRAL
MIXING
PLANTS**



50-Bay Tru-Mixers



Clamshell Buckets



Concrete Buckets



Steel Street Forms

**TRUCK
MIXER
LOADING
PLANTS**



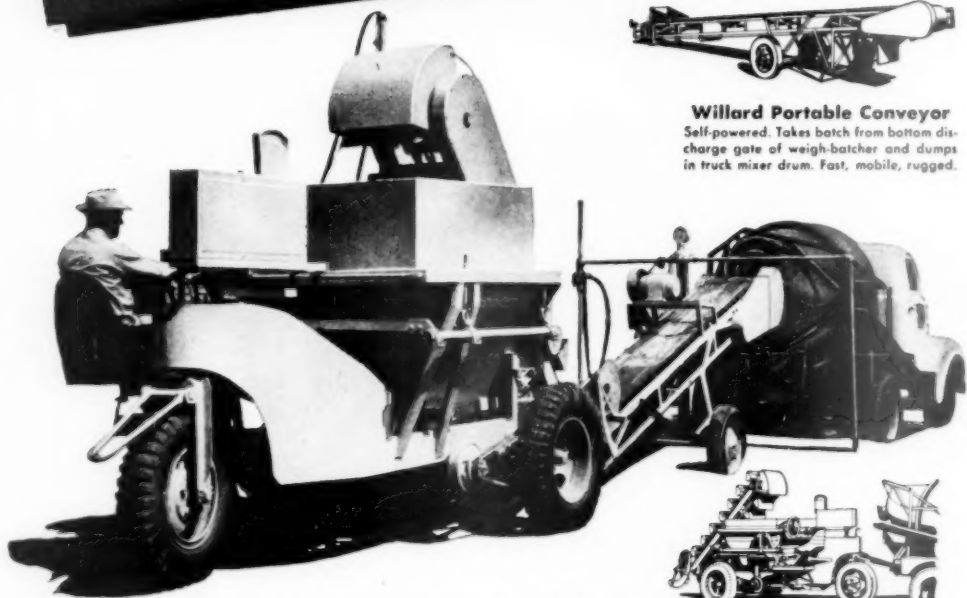
BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company

Farmers Bank Bldg., Pittsburgh 22, Pa.

Birmingham • Chicago • New York • Philadelphia • Washington

Now You... "BIG MONEY" DON'T NEED TO GET INTO THE READY-MIXED CONCRETE BUSINESS



Willard Portable Conveyor

Self-powered. Takes batch from bottom discharge gate of weigh-batcher and dumps in truck mixer drum. Fast, mobile, rugged.

Willard's Revolutionary New "Mobile" System Costs Less than BUNKERS Alone!

PROVED

by scores of systems in daily operation.

FASTER

Can get in close places. No "wheeling!"

LIGHTER

Costs half and weighs half as much as other 3-yd. mixers.

EXCLUSIVE

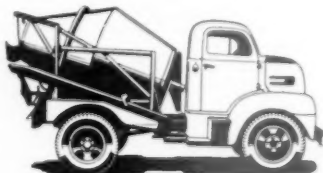
Mixer gear box designed so loading and discharging speeds can be maintained, and then reduced for road.

Here's the new, modern low cost way to "handle" ready-mixed concrete... from mixing to pouring. Eliminates "Bunkers" and many costly operations. The three mobile units pictured do the entire job. A natural for the small sand, gravel, rock producer or material dealer wanting to get into the ready-mix business... at "rock-bottom" cost. A big time and money-saver for contractors, etc. for on-the-job batching. Also enables you to use bulk cement at a big saving. Developed by Carl L. Willard, inventor and pioneer builder of the transit type mixer. Write or wire for full details, and name of nearest dealer.

WILLARD CONCRETE MACHINERY CO., LTD.
2906 Imperial Highway • Lynwood, Calif.

Willard Weigh-Batcher

Self-loading, self-powered. Picks up aggregate from open piles, accurately weighs in 3-yd. hopper by 3-beam scales. Loads a 3-yd. mixer every 5 minutes.



Willard Transit Mixer

3 Yard capacity. Light, strong, one man operated. Fits on short, easily maneuverable 1½ ton trucks, operating from truck engine power take-off. Built in water tank. Eliminates breaking walks and driveways. Can also be bunker loaded.



DISTRIBUTORS WANTED FOR OPEN TERRITORY

NEW MACHINERY

(Continued from page 110)

Truck Body for Handling Block

THE FONTAINE TRUCK EQUIPMENT CO., INC., Birmingham, Ala., has developed a truck body said to permit loading and unloading from the ground of standard concrete building block in three minutes with no labor other than the driver, thus saving two handlings of the block. Capacity of the truck body is from 240 to 440 block. Loading and unloading mechanism is operated through a standard winch, and the gripping device on the bottom course is operated hydraulically. The truck body is adaptable to all standard truck chassis.



Truck body for loading and unloading block in three minutes time

Redesign Lift Trucks

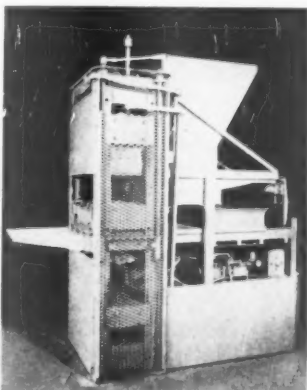
CLARK EQUIPMENT CO., Battle Creek, Mich., has redesigned its gas powered "Clipper" model, 2000-lb. capacity fork lift truck so that it has increased capacity within approximately the same dimensions. The new unit has a capacity of 2000 lb. with load center at 24 in. from the heel of the forks. Truck wheelbase is 36 in., and the frame has been widened slightly to provide greater protection for the wheels and to give more space for servicing; overall width is only 1 in. larger. With the longer wheelbase, additional weight is put on the drive wheels thus providing increased traction and improved performance, the manufacturer states. Mechanical improvements include a new engine of 30 percent higher brake horsepower and increased torque; a new and improved oil sump and valve for operating hydraulic equipment; and greater strength and stability in the frame-steering axle-engine assembly.

The company also has redesigned its "Truckloader" fork lift truck of 1000 lb. capacity. The truck gas tank is now attached to the rear of the frame and is partially enclosed by the counterweight which in turn has been redesigned to more rounded contour. The additional weight is said to provide added stability. Other improvements include additional leg room, reloca-

tion of lift and tilt levers, and hinged louvers on either side of the engine compartment for improved accessibility.

Block-Tile-Brick Machine

CRAWFORD INDUSTRIES, Pomona, Calif., has developed the "Pneu-vibra-Matic" block, tile, and brick machine which can produce twelve 8- x 8- x 16-



Automatic block, tile and brick machine

in. concrete block per min. According to L. L. Crawford, president of the firm, the new unit has been designed to give a uniform product continually, and tests have proven that tolerances can be maintained to within 1/64 of an inch.

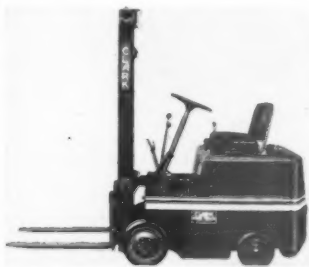
The new automatic machine has an all-pneumatic block molding operation, with no gears or shafts to wear and vary the molding. To assure fully compacted, even density block and brick, a heavy stabilizer on the leveling head and special vibrator action have been incorporated in the unit. Replaceable mold liners are available to assure that block width and depth tolerances remain constant. Adjustable stops (4, 6 and 8 in.) keep block height to close tolerance also.

Dispenser For Air-Entraining Agents

J-W MATERIALS, INC., Napoleon, Ohio, has announced that refinements have been added to the Darex AEA dispenser designed to measure different amounts of air entraining agents in solution into the concrete mix. The calibrated quadrant may be set for various amounts of Darex AEA, in ounces. The dispenser may be installed, ready for operation, in a matter of minutes, and is essentially a container, so arranged with a 3-way valve that the air-entraining solution flows from a supply tank mounted above the container to fill a container completely and then the vent line up to the level of the liquid in the supply tank, the manufacturer explains. The vent line of the dispenser is made of transparent tubing, permitting visual inspection to determine that the container is filled, and that there is adequate solution in the supply tank. This tank has a capacity of 5.6 gal. which is said to be enough to produce approximately 150 cu. yd. of Darex AEA concrete.



Dispenser for controlling flow of air-entraining agents in solution



Redesigned gas-powered 2000-lb. capacity fork lift truck

Big... BUT NOT TOO BIG!

**New Smith
6Yd. Tilter
is a GIANT
only in
Performance
and Output**



You can use this new Smith 6 yard Tilter in your Ready-Mix plant, even if it is only a medium sized plant. Sure, this new mixer is BIG . . . but not too big. It's unusually compact and light in weight. Fits into the same space formerly used by a 4 yard Tilter — but produces 50% more concrete with practically the same labor, power and general overhead costs. Just the right batch for a 4½ yard truck mixer (6½ yard agitator). Assures utmost plant efficiency. Gets agitators out of the yard in a hurry.

Like all Smith Mixers, the new 6 yard Tilter is designed for heavy duty service, with long life and low maintenance cost. It's a triumph in engineering and research, backed by almost a half century of concrete mixer manufacturing experience. Ideal for dams and other big construction projects, as well as Ready-Mix plants.

THE T. L. SMITH COMPANY

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SMITH-MOBILE AGITATORS

with a long proven record of performance. Designed to load and discharge at record speed . . . even very dry or low slump concrete. No dead weight. Built of the toughest, wear resistant materials. Conform in every way to NRMCA standards.

NEW BULLETINS AVAILABLE, just off the press. Bulletin No. 244 describing the new Smith 6 yard Tilter . . . Bulletin No. 243 on Smith 3 yard Tilters . . . Catalog No. 239 on Smith-Mobile Truck Mixers and Agitators. Write for your copies, today.



CONCRETE MIXER MANUFACTURERS SINCE 1900

Trucks Advertise Concrete

IN A RECENT LETTER, Florida Portland Cement Division, General Portland Cement Co., Chicago, Ill., suggests that concrete products manu-



Advertising the advantages of concrete through company trucks

facturers use their trucks to advertise the products being hauled. The ordinary by-stander probably doesn't give a thought to concrete, much less to its advantages, when he sees a mixer-truck go by, the letter states. Therefore concrete, and its advantages, should be called to his attention. This can be done by placing an inexpensive sign on the front top of the mixer-truck, a spot not used for anything else usually. This sign might say: Get Out of the Mud with Concrete; Concrete Driveways Banish Mud; or, Concrete Walkways Instead of Muddy Shoes. A sign should be placed on every truck in service, each sign informing the public of the advantages of the product. Other sign suggestions are: Concrete for Fire Safety; Concrete for Low Upkeep Cost; Concrete for Low Insurance Cost; Concrete for Clean Barns. The photographs show trucks at two Florida operations where this type of program is being carried out.

1,200 UNIT CONCRETE APARTMENT—
the latest job for this portable aggregate plant, and recently for concrete duct tunnel and utility building projects in U. S. and Mexico. In service 11 years.

OVER 100 BATCHES OF CONCRETE
the Heltzel dual aggregate batcher. First of 100 batchers was reported to use concrete from a Heltzel portable aggregate plant.


ASK FOR CATALOG

DUAL CEMENT—C36. PORTABLE AGGREGATE PLANTS—C24, 100-400 TON PLANTS—C37. DUAL BATCHERS—J40 and J42.

HELTZEL

STEEL FORM & IRON CO.
WARREN, OHIO • U. S. A.

10,000 P.S.I.
in 28 days
The VIBRO Way



*Saving a bag
of cement per
cubic yard of concrete*

**More than 75 %
of form costs...**



A recent job involving the manufacture of 1400 heavily reinforced concrete gratings for Airport drainage, obtained these results by using two VIBRO-PLUS TOP DOG VIBRATORS. Two farms produced thirty (30) castings a day.

To avoid the entraining of air, a harsh mix of 2.2 gals. of water per sack of portland cement was used. The problem of distributing the concrete was an acute one, because of the heavy reinforcing and resulting small pour space. Two VIBRO-PLUS Top Dog vibrators solved this problem by rendering the concrete in this mold fluid; and consolidated the dry harsh concrete mixture by PRECISION VIBRATION.

USES: Pipes, gratings, septic tanks, and other specialty forms, also chutes, bins, hoppers.

Write us for specific information
as to your particular vibration
problem; and free booklet.

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PRODUCTS, INC.**



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Virginia Ready Mix Producers Organize

THE VIRGINIA READY MIXED CONCRETE ASSOCIATION, INC., has been organized and incorporated for the purpose of promoting the welfare of ready-mixed concrete producers and users in The Commonwealth of Virginia. Officers are: president, J. C. McCarthy, The Lynchburg Ready Mixed Concrete Co.; vice-president, Frank Lucas, The Roanoke Ready Mix Concrete Corp.; and secretary-treasurer, T. C. Laramore, Jr., Laramore Construction Co., Danville. Executive Secretary John W. Mitchell, formerly with Froehling and Robertson, Inc., maintains association headquarters at 310 West Grace Street, Richmond, Va. The board of directors consists of: G. M. Birsch, J. F. Ingoldsby, C. W. Shank, L. R. O'Hara, T. C. Laramore, Jr., and H. P. Williams.

Northeastern Pipe Producers Meet

THE NORTHEASTERN CONCRETE PIPE ASSOCIATION, composed of pipe producers from New England and Upper New York State, met recently in Albany, N. Y., at which time the following officers were elected: president, Frank J. Gogan, Great Lakes Concrete Pipe Co., Buffalo; vice president, Henry C. Eames, New England Concrete Pipe Corp., Upper Newton Falls; and secretary-treasurer, George L. Pullin, Jr., Universal Concrete Pipe Co., Syracuse. Members of the New York State Department of Public Works were guests. It was noted that increased use is being made of concrete pipe cattle passes in the Northeast. Attention also was called to the development of specifications for plain non-reinforced concrete pipe for culvert ends where there is little or no load on the pipe.

Dated Block

SOUTHWICK CONCRETE PRODUCTS, Portland, Ore., is dating its pumice building block to assure builders that they are sufficiently cured to render maximum service.

Pre-mix Plant

(Continued from page 100)

five F-6, 2-ton and two F-8, 3-ton. Three of the F-6 models are mounted on six-wheel chassis, fitted with Grico tandem rear axles. The four-wheel F-6, though mounted with a 4-cu. yd. body, is used only for carrying small orders up to a maximum of 3-cu. yd. for finishing pours on jobs, small street repairs, etc.

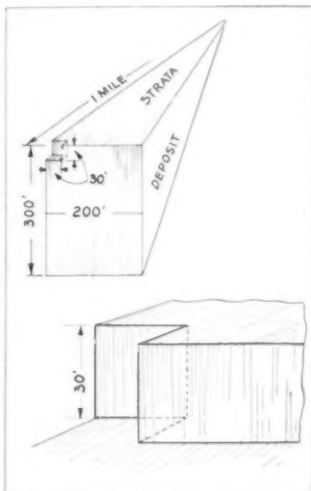
Officers of the corporation are its founders: Glenn E. Killins, president; and Ray C. Killins, vice-president. Sons of the founders and present operators are David A. Killins, treasurer; and James D. Killins, secretary. Superintendent of both the sand and gravel plant and the ready mixed concrete operation is J. Willis Wing.

Lightweight Aggregate

(Continued from page 103)

crete made with Solite, and other quality control measures.

Weight of dry, loose Solite is 60 lb. per cu. ft., while concrete made from this aggregate varies from 80 to 92 lb. per cu. ft. for 4- and 7-bag mix designs, respectively. A 7½-bag mix has a compressive strength of 4800 p.s.i. at seven days. Compressive strength of a mod-



Diagrammatic sketch of method used in quarrying deposit where strata parallel mile long axis of formation. After opening 30- x 30-ft. entry, a 200-ft. slice is driven across the strike

ular concrete block made with this aggregate in a mix design calling for 3 bags cement per cu. yd. of Solite is 1250 p.s.i.

Southern Lightweight Aggregate Corp. is an affiliate of the older Southern Materials Corp. Officers of the new corporation are J. W. Roberts, president; C. F. Gregson and J. P. Sadler, vice-presidents; and H. C. Hofheimer, secretary-treasurer. A. C. Ford is director of sales and T. B. Hartless is director of engineering and research. A. F. Old is plant superintendent and R. F. Gibson is his assistant.

Diversified Products

(Continued from page 105)

and 6-ft. widths and the risers are for 4 and 5 steps. In the illustration, steps of four risers are being assembled. These are cast with sheet metal forms on those parts where a finished surface is desired and the rest of the form is wood. They are reinforced with 6- x 6-mesh wire, 10-10 gauge and each tread has two ¾-in. rods.

Street marker posts are made in steel forms. These posts are 8 in. x 8 in. x 7 ft. high and are chamfered

from the top down for 4½ ft. At the time of inspection, some special marker posts were being cast that will be used to mark the boundary lines of the city of Albany. These had a special brass plate in the upper end that carried directional and other markings.

Another item cast here and one that uses up all the small bits of scrap reinforcing iron is walk tile or flag stone. These are cast flat and in sizes, 12 x 12 in.; 12 x 18 in.; and 12 x 24 in.; 2 in. thick. All forms in the specialty shop are vibrated by a small, air-driven Chicago Pneumatic chipping hammer.

Some sales are made through contractor dealers, hardware companies, etc., who receive a commission on the basis of units sold. Some of these dealers carry a small stock of the company's products on hand. Balance of sales are handled at the plant.

Aggregates for the ready mix plant, including superock aggregate, are delivered in railroad cars and unloaded to open storage piles with a reclaiming belt serving the plant. Johnson batchers and sacked cement are used.

Officers and personnel of the Albany Concrete Products Co. are as follows: J. G. Marbury, vice-president and general manager; Olin Kinsey, plant superintendent; B. H. Holland, office manager; W. E. Bland, foreman and L. L. Dorman, chief mechanic. R. H. Wright, Jr., Columbus, Ga., is president of the company, and H. T. Harden, is secretary-treasurer, with

offices in Columbus, Ga., where they are president and secretary-treasurer, respectively, of the Wright Contracting Co.

All loading and hauling is done by contract by T. T. Gooch. This work is paid for on the basis of zoning, the first zone being a 5 mi. radius of the plant with increasing rates based on a 30 mile breaking point thereafter. Trade area consists of about a 60 mile radius of Albany.

Compact Ready-Mix Plant

(Continued from page 106)

are provided with Noble air cylinders, air vibrators are used where needed. At time of inspection there was one cement bin holding 60 tons, and plans called for erection of a second similar sized cement storage bin.

The company has batching facilities at Azusa and at other strategic locations in southern California and has available a large fleet of mixer trucks to draw from. Smith and Rex mixers are both used, most of them mounted on Fords. Most of the units are of 4-cu. yd. capacity.

The offices of the company are located at Azusa. H. E. Bender is president of the company. James Walter House is in charge of the Pomona plant.

LEE R. WARREN has started the manufacture of concrete block and tile at Dexter, Mo.

It works instantly — this spur to profits by checking costs: the Clark Method of handling materials. By speeding material flow, it automatically expands capacity. By tiering material it transforms idle air rights into profitable storage space. It reduces demurrage, cuts the accident rate to a minimum. You'll find many uses, for every use is an opportunity to save money. A good way to start is to CONSULT CLARK.



Material Handling News is "Must" reading — send for it.

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INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 68, MICH.
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GUARANTEES...

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LIKE IT
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The NEW KENT "Blockmatic" . .

A Revolutionary "Robot" Block Handling System

1949 Nobel Award Winner for the Most Outstanding Achievement in the Concrete Products Industry in the Preceding Year

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A new and revolutionary time and labor saving system for the rapid transfer of cured blocks to storage and the cleaning and returning of pallets to the block machine magazine.

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Here indeed is a thoroughly proved system of reducing costs and holding them in line to meet competition. Write TODAY for full particulars.

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If equipment you are in market for is not listed above, write it in the space below.

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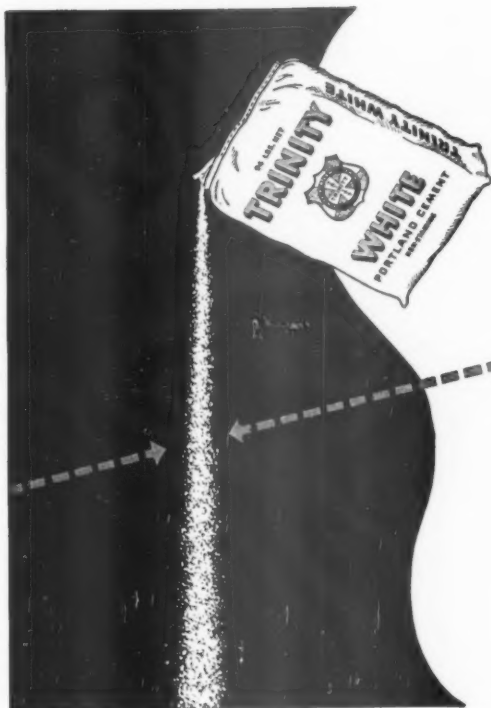
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Trinity White

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You'll get fine results with this extra white cement. It's true Portland Cement made to ASTM and Federal Specifications. If your dealer does not have it, write the office nearest you: Trinity Portland Cement Division, General Portland Cement Co., 111 West Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles.

as white



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Increase your MARKET!

with Dixon Pipe-Making Machines



The NEW Dixon Model C Hydraulic Pipe Machine produces 3 and 4-foot joints that exceed ASTM specifications at higher speed, with smaller crews and less operating expense.

Now you can turn out 4 to 15-inch bell and spigot or 6 to 16-inch tongue and groove pipe at highly competitive prices and still maintain reasonable margins of profit.

Full production crews produce 1,200 to 3,000 feet, 1½ to 57 tons of pipe per 8-hour day.



With the Dixon Model "B", 4-man crews produce 80 joints (240 feet) of 4 to 12-inch B & S and 6 to 12-inch T & G per hour.

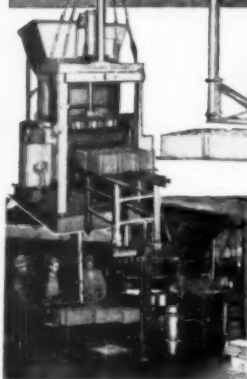
Dixon Packerhead Pipe Machines, Pipe Bend Machines, Spiral Blade Mixers, Belt Conveyors, Septic Tank Molds, and Off-Bearing Carts. For full information write to:

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PIPE MACHINES

HOUSTON CONCRETE MACHINERY CO.

6600 WASHINGTON AVE., HOUSTON 7, TEXAS

OVER 7,000 BLOCK Per Day AUTOMATICALLY PRODUCED



FOR LESS Than 1 1/4¢ Per Block LABOR COSTS

Mr. Howard E. Johnston of the Franklin Concrete, Inc., of Franklin, Tenn., recently wrote us an enthusiastic letter.

Excerpts of this letter are as follows: "The past week we produced 39,038 8"x8"x16" units in 5 1/2 days one shift, or over 7000 per day. Our labor cost was .0121 cents per block."

"We feel our greatest gain is 100% improvement in our product."

If you are interested in similar production records we invite you to write us at once for full details—others have profited greatly through just a post card.

LITH-I-BAR CO., Dept. CP-7 Holland, Mich.

LITH-I-BLOCK Machine



Combination DRAIN TILE TURPENTINE CUP & FLOWER POT MACHINE

Here is the machine that will broaden your line and make money for you.



Now you can make big profits . . . making Drain Tile, Flower Pots Turpentine Cups, etc.

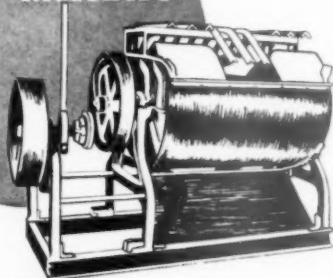
The Wagoner No. 1/A Combination Horizontal Machine makes 4", 5", 6"-drain tile 12" long, many sizes of concrete flower pots, and straight and slanting turpentine cups. This machine is very fast and will make 1,000 to 3,000 tile in a day and many more of the pots.

The operation is simple—maintenance cost is low—profits are high—write for descriptive literature and FREE sample flower pot.

Wagoner Mfg. Company also produces block machines, mixers, forms for precast steps, lintels, fence posts and stepping stones.

WAGONER MANUFACTURING COMPANY
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BLYSTONE MIXERS



BACKED by more than 35 years of specialized experience, BLYSTONE Mixers offer five basic advantages for a wide variety of concrete work: 1—Low Initial Cost; 2—Low Mix Cost; 3—Thorough Mix; 4—Easy Operation; and 5—Sturdy Construction.

Write for complete details.

BLYSTONE DIVISION
STANDARD SAND AND MACHINE CO.

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Color in Concrete

The easily dispersible, non-floating, permanent, qualities of these extra strong colors produce intense shades in concrete.

Special blends in ton lots at no additional charge. Working samples furnished.

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Attention

Kelley Block Machine Operators

Attention

Attachment now available for all KELLEY Stripper Single Block Machines to produce TWO 8"x8"x16" DENSE and STRONG blocks per operation.

Single block mold box attachment for either ROCK or PANEL Face blocks also available.

Write for complete details.

WITTEMANN MACHINERY CO.

MFRS.

(Successors to E. B. Kelley Co.)
Farmingdale Phone 5-6791 New Jersey

FLEMING THE OF ST. LOUIS

FMC

180

Automatic Concrete Block Machine

CUSTOMERS SAY —

"I still say you should call it the 225 as it turns out that many per hour, day in and day out."

Kingsport, Tennessee

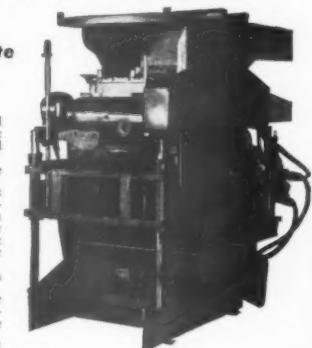
"While you rate them at 180 per hour, we are presently running both machines at a rate of 240 blocks per hour on each. Our total labor cost in the kiln is 1½ cents per block."

Wichita, Kansas

"The timing is positive and not regulated by the operator. But, best of all, the machine is well made."

Independence, Missouri

THE PLAIN PALLET
VIBRATOR AT
LOW COST!



COMPLETE BLOCK
PLANTS ENGINEERED
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Handle ANY JOB in a concrete Pipe Plant

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- Carry concrete bucket
- Lift bucket over form
- Charge pipe form
- Remove cone from form
- Pull out core
- Strip outside form
- Tip over finished pipe
- Stockpile pipe
- Load pipe on trailer

Picture shows Model F-6B with boom attachment, capacity 6000 lbs. Also F-10, capacity 10,000 lbs., and F-16, capacity 16,000 lbs.

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Literature

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Controlled
Vibration
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Plain Pallets
All Regular and
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Makes 2-8x8x16 or
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(any of the above machines FREE to anybody agreeing to buy the pallets)

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- 2 C.Y. Smith Mixer mounted on 1946 KRS Intern.
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1—Besser Victory Vibrapac Plain Stripper, Fully Automatic. All motors, starters and switches to operate at a speed of 4 cycles per minute, including extension offbearing conveyor. Also air operated offbearing hoist with finger grips.

1—Attachment to make 7½x7½x15½, 3 core units, one at a time, including parts to make plain ends, halves and steel sash jamb units. Also set of vibrator shafts.

1—Attachment to make 3½x7½x15½" partition units, two at a time, including set of vibrating shafts.

1—25' Besser batch mixer, roller bearing type equipped with 15 h.p. motor and starters and switches. Drum grid, gear housing and extension hopper for mixer at 2' below floor level.

1—25' Besser ship loader with magnetic reversing starter, limit switch and push button.

3000—Plain steel pallets, 13x18½x5/16".

3900—Plain Steel pallets, 5/16"x9"x18½".

61—Model 45 block racks to hold 45—13" wide pallets.

Parts to change over Victory Vibrapac from 9" pallet arrangement to use 13" pallets.

CROWE-GULDE CEMENT COMPANY
Amarillo, Texas

BLOCK MACHINES FOR SALE

Six Clipper Strippers—\$1500.00 ea.
All guaranteed to be in first class condition. Thousands of steel and cast-iron, cored pallets.

UNIVERSAL CONCRETE PIPE CO.

Telephone Main 3313
297 S. High St. Columbus 15, O.

COMPLETE BLOCK PLANT EQUIPMENT

MULTI-PLY 8-Bar TAMPER and 5 h.p. Motor; 8" and 12" attachments.
One Bag Mixer and 10 H.P. motor; conveyor and 1 H.P. motor.
40 Steel Racks; Barrett lift truck.
1200—7½x15½ 45% A.S.; 1000 11½x15½ 50 A.S. C.I. Pallets.
Sell separate or as unit.
RICHMOND CEMENT PRODUCTS
Richmond, Ill.

HAVE YOU SEEN OUR NEW PALLET CLEANERS?

AN AUTOMATIC MACHINE FOR REMOVING CONCRETE "BUILD-UP" FROM PLAIN PALLETS. Cleans an 18½x26" Pallet in 12 seconds.
Write for Free Literature
BERGEN MACHINE & TOOL CO., INC.
189 Franklin Ave., Nutley 10, N. J.

40"—Besser Mixer—Roll Bearing complete with 25 H.P. ball bearing motor and V-belt Drive—\$1,000.00
25"—Besser Mixer without Motor—\$200.00
300—Amp. Lincoln Welder—\$100.00
1—Bag Cleaner—without motor—\$25.00
1—Jeffery Belt Conveyor—\$100.00
1—Overhead Steel Bin approx. 20 yd.—\$280.00.
SCRANTON BUILDING BLOCK CO.
600 Glen St. Scranton 5, Pa.

FOR SALE

One Johnson 600 cubic yard cap., 8 compartments; 84 ft. Max shaped mounted on 14" H-Beam, 67 ft. long; Batching Equipment, Water Batcher; Coliseum, two, 2 yard Smith Mixer, Cement Elevator, about 800 ft. 94" Band Conveyor with under truck feed conveyor; Hot water equipment, Air compressors, Heating Plant, Office Equipment. A plant built about two years ago and on account of its location was condemned and only was in operation about a month. Held on Court Order. The plant is complete and is for sale at less than one half of the cost. If you are contemplating building a ready mix plant it will pay you well to come and see this before buying.

HASS WHOLESALE, INC.

3922 W. Sample St., South Bend 21, Ind.
Telephone—3-9407

1—3-Compartment aggregate bin
1—Vertical Enclosed Elevator 53 ft.
1—One cubic yard Johnson Batchers
1—Stearns Clipper Block Machine
1—Pallet Oiler
12", 8", 6", 4", and 3" Steel Cored Pallets
91—Steel Block Racks
Priced for quick sale.
New Holland Concrete Products, Inc.
New Holland, Pa.

FOR SALE

We have a Hyster 40 lift truck for sale, purchased new in 1946.

Independent Concrete Pipe Corp.
P.O. Box 356 Lockport, Ill.

FOR SALE

Two Besser 50 foot Batch Mixers. In excellent condition. Both 1946 models. One new Kirk & Blum Vibrating Table. Never Used.

CINDER PRODUCTS, INC.
Este Ave. Cincinnati, Ohio

\$15,000 Block Plant—capacity 6000 8x16 blocks per day.
1—PC George 2 unit super vibrator block machine.
2—Bob Gravelly 2 unit super vibrator twin block machines. 7,000 all sizes partition and regular block pallets. Now in operation complete with 1 and 2 bag mixers, motors, hoppers, conveyors and all accessories—a complete plant. Other business interest reason for selling. No reasonable offer refused.
DR. A. B. CRANE
P.O. Box 208 Phone 147 or 371 Passaic, N.J.

Marlon Electric Shovel
1½ Yard
Model No. 37
Serial No. 50226
All new wiring
Machine in good working condition
CONCRETE MATERIALS & CONSTRUCTION COMPANY
405 Granby Bldg. Cedar Rapids, Iowa
Tel. 3-0233

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

One Stearns Jolterete Block Machine with assortment of moulds and pallets. Hydraulic lift jacks and wood racks. All in good operating condition.

GREENVILLE CONCRETE CO.
Box 1532 Greenville, S. C.

—BUSINESS OPPORTUNITIES—

FOR SALE

One of the Most Modern Light Weight Concrete Pipe and Block Plants in the Central Part of California, all electric equipped machinery all steel fireproof buildings. Practically new. Should be seen to appreciate, plenty of business to look forward to.

Address P.O. Box 1010, Paso Robles, Calif.

FOR SALE

Good cement block business, completely furnished with almost new machinery. In good business town, no competition.

INTERLOCKING BLOCK CO.

Ashland, Kansas

FOR SALE

Complete concrete block plant in operation. Poor health is cause for selling. \$7,000 includes equipment and location.

ABILENE CONCRETE PRODUCTS

617 E. 1st St. Abilene, Kans.

FOR SALE

Most complete, modern, Besser Block Mfg. plant and shale light-weight aggregate plant in Pacific Northwest. Annual sales over \$1,000,000. Company owns unlimited supply highest quality shale. Owner retiring from business. Terms: Box H-74, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FOR SALE

Completely equipped block plant in Southern Iowa town of 30,000 population. 1000 block capacity operating daily. Includes two late model 1½ and 2 ton trucks and 8 A. ground. Reason for selling given to interested party.

Box H-73, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Ill.

—EQUIPMENT WANTED—

WANTED TO PURCHASE

Hydro-Korpak
Block Machine

Box H-70, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Ill.

—CINDERS FOR SALE—

ANTHRACITE CINDERS

A car load or a train load. Our supply is unlimited. Processed ready to use. Locations on Baltimore & Ohio, Pennsylvania, and Lehigh Valley Railroads.

Call or write
ROY F. McMINDE COMPANY
105 Mace Avenue Baltimore 21, Md.
Phone: Essex 179

—PUMICE FOR SALE—

IDAHO WHITE PUMICE

A car load or a train load. Our supply is unlimited. (Processed ready to use.) This same pumice used in Blocks to obtain Fire Underwriter's B-4 approval.

POCATELLO PUMICE COMPANY
231 W. Center St. Pocatello, Idaho
Phone 555

—POSITIONS WANTED—

Precast Concrete Expert is open for connection with a progressive products plant that is ready to expand its operations into precast work of various sorts, cast stone, roof, floor or wall slabs, joists or other specialties. He knows the various types of light weight aggregates. Box H-69, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Ill.

—FOR SALE—

TRUCK MIXERS

(Less Chassis)

PROMPT DELIVERY

10-JAIGER 4 YARD

Separate Engine Drive

200 gal. Water Tank

25 gal. Flush Tank

\$2,200.00 each F.O.B. Cars

Excellent Working Condition

May be inspected at:

EDWARD EHRBAR, INC.

29 Meserole Ave. a Brooklyn, N. Y.
Evergreen 3-5000

FOR SALE

Crushed and sized cinder aggregate, tested and approved for the manufacture of cinder blocks. Write:

DULUTH CINDER SLAG & STONE CO.
Box 274 Duluth, Minn.

FOR SALE

Peerless Turbine Pump and Panel 150 HP—Capacity 3000 gpm. 160' head. Used from July 1947 to November 1948. In excellent condition. F.O.B. cars Yakima at \$1500.00. New Factory Price—\$4,000.00.

YAKIMA CEMENT PRODUCTS CO.
Box 436 Yakima, Wash.

FOR SALE

Truck mounted Osgood crane, complete with drag and clam buckets. In fine condition; truck, large size Diamond "T" both units two years old. Low mileage on truck as crane used stationary. Priced right.

McNamee Ready Mixed Concrete Co.
Box 173 Xenia, O.
Phone 937

FOR SALE

1—5 H.P. 3 ph De Villiers compressor A-1 condition.
1000—8" aluminum cored pallets, 500—4", 250—12", A-1 condition.
25 Steel racks, capacity 48 blocks, condition good.

RAUSCH BROS.
Wilmot, Wis. Ph. Wilmot 833

FOR SALE

International model KBR-11 trucks suitable for mixer mounting. Also several dumps.

BERMAN SALES CO.
R.D. No. 1 Pennsburg, Pa.
Phone Pennsburg 521

—CEMENT COLORS—

CONCRETE BRICK COLORS CEMENT COLORS MORTAR COLORS

made by
BLUE RIDGE TALC CO., INC.
Henry, Virginia

CEMENT COLORS—Write for samples and prices of "LANSCO" CEMENT COLORS in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
73 Delevan St. Brooklyn 31, N. Y.

For best results in selling used equipment, use the classified section of Concrete Products.

FOR SALE

Hydro-Korpak Single-Automatic 18 month old—completely rebuilt with 8" S. S. Pallets \$1950. or highest bid. Original cost \$4,700.00.

DunBrik Machine—Complete Racks, Pallets, Mixer, all attachments original cost in '47 \$11,500.00, \$5,750.00 or highest bid. Franchise included if necessary.

JENISON BRICK AND BLOCK CO.

Jenison, Michigan

FOR SALE

1 Darden Rockcrete Vibrator with 4" and 8" set-up and 4000 Pallets 5 HP Air Compressor Pallet Dunker
Cinder Conveyor 60 cu. yds. Steel Butler Hine Blystone Mixer
Anchor Tamper Brick Machine and Pallets
2000 3" Pallets, 2000 6", 2000 12" Pallets with Mold Boxes
50 Racks Clipper Masonry Saw 2 Truckman Platform lift trucks reduction gears motors and pulleys
20 H.P. Upright Oil Burner—for Steam Curing complete
Will Sacrifice Sell as a complete setup or separately.

Landis Concrete Products

Landisville, N. J.

—TAMP MACHINE CONCRETE PIPE FORMS—

3 Forms 12"x1½"x4' B&S (Universal)
175 Pallets 12"x1½" (Universal)
3 Forms 15"x2"x4' B&S (Universal)
250 Pallets 15"x2" (Universal)
2 Forms 18"x2½" B&S (Sherman)
125 Pallets 18"x2½" (Sherman)
2 Forms 21"x2½"x4' B&S (Universal)
100 Pallets 21"x2½" (Universal)
2 Forms 24"x2½"x4' B&S (Sherman)
125 Pallets 24"x2½" (Sherman)
55 Pallets 42"x4½" T&G Unused (Sherman)
55 Pallets 48"x5" T&G Unused (Sherman)

New England Concrete Pipe Corp.

99 Needham St.
Newton Upper Falls 64, Mass.

FOR SALE

1947 Kelley Air Stripper block machines—mold boxes steel pallets from 4" to 12"—chimney block attachments—60 steel racks and shelves—priced to sell quick.

HOFFMANN BLOCK COMPANY

Little Ferry, New Jersey

1 Miles Tanner face block machine for 8"x16" blocks. One year old. Plant capacity increased is the reason for selling. Complete with elevator conveyor and Ideal One line mixer. Less color.

Attachments for making halves, corners and Rock Face blocks. Also pallets, carts and rails.

MACKIN SAND & CONCRETE PRODUCTS
Greenfield, Mass.
Tel. 3622

FOR SALE

6-Inch curved mold box for Stearns Clipper Stripper. New. \$100.00 f.o.b. Frederick, Md.

RICHARD F. KLINE

14 Water St., Frederick, Md., Ph. 550

—PACKER-HEAD WINGS—

McCracken Type — PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES

LUFKIN, TEXAS

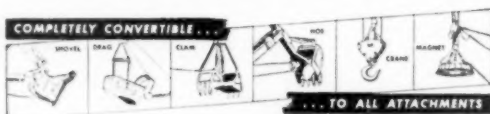


This 50,000 pound Mobile Crane is a completely new member of the UNIT Crane and Shovel line. Designed for both "on and off" highway operation. So compact, it works efficiently even in small, cramped quarters, "in or out" of the yard.

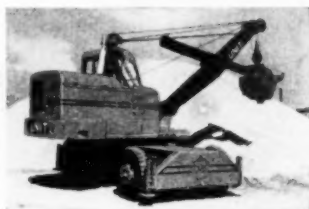
- Rugged... Perfectly Balanced
- Hook Roller Construction
- Controlled and Operated by ONE Man
- Powered by ONIX Engine
- Hydraulic Steering
- Air Brakes and 4 Speed Air-Actuated Transmission
- Heavy Duty, yet operated with remarkable SPEED... SAFETY... ACCURACY... ECONOMY!

UNIT CRANE & SHOVEL CORP.

6431 W. Burnham Street • Milwaukee 14, Wis., U. S. A.



**UNIT 357
MOBILE CRANE
WITH
1/2 Yd. SHOVEL
ATTACHMENT**



- IT'S SELF-PROPELLED
- IT RIDES ON RUBBER
- IT HAS 1001 USES

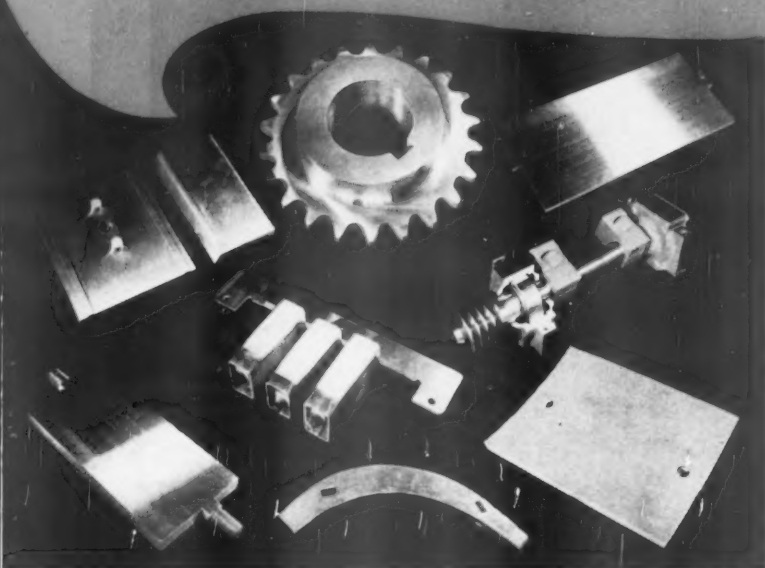


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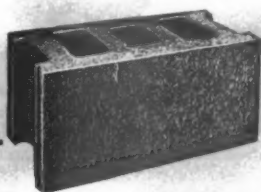
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You **SAVE DOLLARS** by Using Genuine **BESSER** Parts and Attachments!



The genuine Besser parts illustrated above, are not in relative size. Vibrating shaft has section cut away to show self-aligning, anti-friction bearings. The proper steel is used for every Vibrapac part, plus correct heat treating and rigid testing in the Besser metallurgical and chemical control laboratory. That's why genuine Besser parts and attachments last longer, assure accurate block production.

**ONE
BLOCK**



**...OUT OF
EVERY 20**

**is wasted when you operate your
VIBRAPAC with worn mold parts!**

Actual figures prove that a concrete block made with worn cores and division plates is approximately two pounds overweight. (26 cubic inches of concrete) Multiply this by the number of block produced each day and the figures become staggering. Yes, it really pays to use genuine Besser parts. The savings in dollars, on a single day's production often pays for the parts.

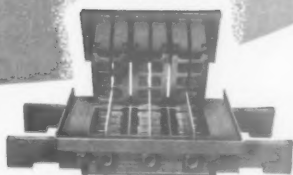


***Genuine Besser Parts
are Shipped the Same Day
that Order is Received***

BESSER MANUFACTURING COMPANY

Complete Equipment for Concrete Products Plants

115-49th STREET, ALPENA, MICH., U.S.A.



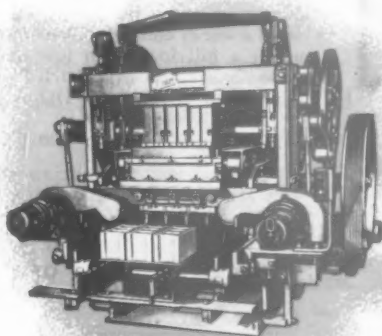
Genuine Besser attachment. Built from original Besser drawings, employing the very best machine tools. Produces accurately dimensioned units that command a premium.

Continuous VIBRAPAC Production of High-Quality Masonry Units Assures Greater Plant Profits

When it's time to replace mold parts on your Besser Vibrapac, be sure to order *genuine* Besser parts. They will keep your Vibrapac machine operating at peak efficiency with a minimum of "down time."

All Vibrapac parts orders are filled at the Besser factory. The parts are taken directly from the production line. Thus, you are assured of receiving the identical pieces that are used in manufacturing new Besser Vibrapac machines . . . parts that are designed and built for a specific job. Assures maximum speed and accuracy in block production. Costs less in the long run.

**Stop Concrete Waste . . . Buy
Genuine Besser Parts!**

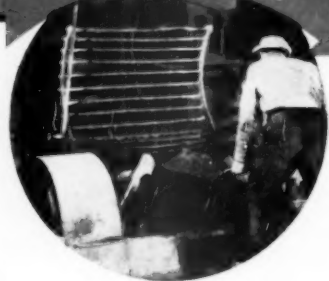


BESSER Super Vibrapac

Modern, high-speed block machine, fully automatic. No machine operator required. Produces three 7½" x 7½" x 15½" modular units at a time on one Plain Pallet. Other sizes in equivalent multiples.



ASSURED BY



**MAXIMUM EFFICIENCY
MINIMUM MAINTENANCE
TROUBLE-FREE SERVICE
STANDARDIZED PARTS
PLANTS THAT CLICK
YOUR MONEY'S WORTH**

**TOP GRADE MATERIALS
RUGGED SIMPLICITY
IDENTICAL DESIGN
NEW TECHNIQUES
EXPERT ENGINEERING
DESIRE TO SERVE**

THE FAMOUS STEARNS BATCH MIXERS

"Don't get a boy to do a man's work" is good advice when you are buying a new mixer. You want a sturdy efficient mixer to operate steadily under a full load with low maintenance and power costs. Stearns Batch Mixers will meet your requirements and **DO A BETTER JOB OF MIXING FASTER.**

Five standard Mixer sizes: 12, 18, 28, 42 and 50 cu. ft. • Pulley or V-belt motor • Wear-resistant, interchangeable liner bars • Adjustable "Sterloy" mixing blades—also available in "Ni-Hard" metal for all sizes • Self-aligning, anti-friction, dust-proof bearings • Steel drums welded to heavy heads • Easy-open, lock-tight, no-leak door • No charge for consultations with Stearns Engineers, who *don't have to guess!* • Prompt delivery • Literature.

**MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A
QUARTER-CENTURY OF KNOW-HOW**

STEARNS

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN



STEARNS 15



JOLTCRETES



CLIPPER STRIPPERS



MIXERS



SKIP LOADERS



TURNABLES



SINTERLITE



Worth Investigating!

From the standpoint of high output, economical operation and utility, the Bucyrus-Erie 85-B is an excavator worth investigating, for this capable 3¼-yd. machine offers all three. Balanced speeds, torques and weight placement combine with ample power under perfect control for a fast cycle that boosts production. Smooth operation with simple Ward-Leonard control reduces operating stresses, while elimination of all operating clutches and brakes with their maintenance and adjustment time means

lower upkeep costs. The 85-B also provides outstanding crane and dragline service and — like the other Bucyrus-Erie mine and quarry machines — combines the resources of wide field experience, engineering skill and unequalled modern manufacturing facilities in an excavator of "years ahead" design, durably built for lifetime service.

57148



SOUTH MILWAUKEE, WISCONSIN

Control Large Volumes of Pulp

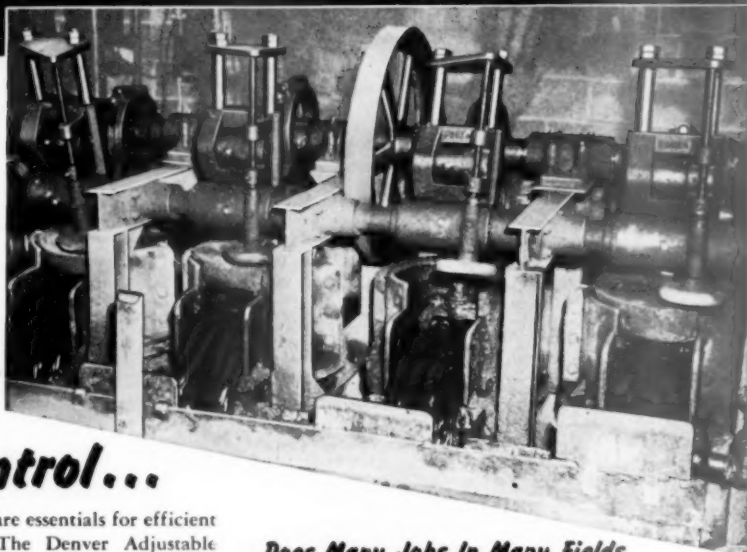
WITH A

Denver Adjustable Stroke Diaphragm Pump

This 6" Quadruplex Denver Adjustable Stroke Diaphragm Pump is doing a real job at the Tamaqua Colliery of the Lehigh Navigation Coal Company, Inc.

Material... Minus 6 mesh washery refuse (Underflow from 75' diameter Denver Hydroclassifier)

% solids in pulp... 35-45
Gallons pulp per min.... 600
Tons solids per 24 hrs... 1450-2000



Density Control...

... and pulp flow regulation are essentials for efficient industrial plant operation. The Denver Adjustable Stroke Diaphragm Pump, with its large volume capacity, ease of control, and rugged, long wearing construction, is an ideal unit for heavy duty "24-hour service."

Hand Wheel Controls Pulp While Pump is Running

Simply turning the adjustable hand wheel changes the length of stroke and immediately alters the pulp flow to the required amount, while the pump is operating.

Rugged Construction Gives Long Life And "24-Hour Service"

The Denver Adjustable Stroke Diaphragm Pump is sturdily built to give trouble-free service. Molded rubber valve seats and diaphragms are long wearing and may be quickly replaced with a minimum of shutdown time.

Does Many Jobs In Many Fields

In coal washing...in copper, phosphate, potash and other concentrators...and in industrial plants... large volumes of pulp are being handled "24 hours per day," month after month with these heavy duty Denver pumps.

Wide Range of Sizes, Large or Small Capacities

Sizes range from 2" to 6" in Simplex, Duplex, Triplex or Quadruplex units.
A 6" Quadruplex Pump, handling 60% solids at 4.2 specific gravity, has a rated capacity of 3,140 tons per 24 hours. A 2" Simplex Pump under similar conditions has a rated capacity of 80 tons per 24 hours.

Let us help you solve your pumping problems. Write today for Bulletin P8-B for additional information on the Denver Adjustable Stroke Diaphragm Pump. Other bulletins also available on a complete line of ore dressing equipment.



"The firm that makes its friends happier, healthier and wealthier"

DENVER EQUIPMENT COMPANY
P. O. BOX 5268 • DENVER 17, COLORADO

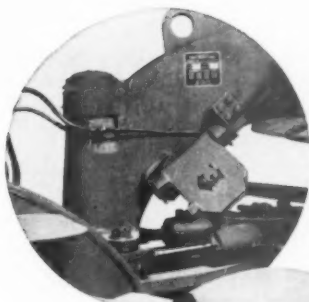
DENVER • NEW YORK CITY • CHICAGO • TORONTO • VANCOUVER • MEXICO CITY • LONDON • JOHANNESBURG • RICHMOND, AUSTRALIA



This Hydro-Steer cut-away shows how finger-tip pressure on the steering wheel actuates the valve controlling the oil flow to the steering cylinders.

Heiliner Hydro-Steer

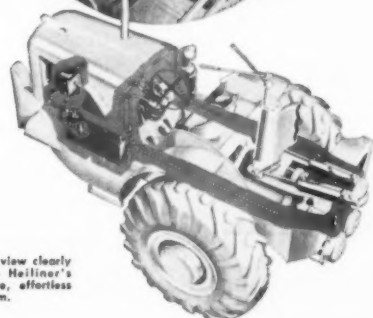
*the right steer
to larger earthmoving profits*



This husky heavy-duty hitch permits complete freedom of movement between the 2-wheel tractor, and scraper. Mechanical stops prevent over-steering.



The Hydro-Steer lets your operator turn the 39-foot Heiliner in a 22-ft. radius. And, he can do it with one hand.



This phantom view clearly illustrates the Heiliner's safe, positive, effortless steering system.

1. Because the Heiliner's patented hydraulic pump delivers a constant volume of oil, regardless of engine rpm — for safe, positive steering at all times.
2. Because your operator can handle a fully loaded Heiliner (wt. 45 tons) with passenger-car ease, maneuver quickly for faster cycles, move more dirt.

These and many other Heiliner features help you make larger earthmoving profits. Get the full story on the Heiliner. Mail the coupon today.

R-105A

THE HEIL CO.

Factories: Milwaukee — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

Dept. 7779 3077 West Montana Street, Milwaukee 1, Wisconsin

Please send me a Bulletin describing all the many money-saving advantages of the amazing Heiliner.

Name Title

Company

Address

City (.....) State

to Management:

Your employees want to help you build security

HERE'S HOW 7,500,000 WORKERS ARE DOING IT

More than 20,000 companies now maintain the Payroll Savings Plan, by which their employees invest in U. S. Savings Bonds automatically every pay day. This Plan builds security not only for the individual employees, but for their companies and for the nation!

As you know, Savings Bonds pay \$4 at maturity for every \$3 invested. Thus they help create a "rainy-day" fund for each Payroll Saver, increasing his security.

How P. S. P. helps employers

America's leading corporations report these company benefits from the Payroll Savings Plan: As Bonds increase the worker's economic peace of mind, plant morale improves. Production increases—because absenteeism, labor turnover, and the accident rate all decline. Relations improve between employer and employee.

Savings Bond dollars are dollars removed from the spending stream. They are deferred purchasing power—an assurance of good business during the years to come. The Treasury uses net Savings Bond dollars to

help reduce inflationary credit potential in the banking system by retiring short-term bank-held Federal securities. So Bonds increase the nation's economic security, too!

Proof that employees want P. S. P.

Practically everybody wants to *save*. Every one of your employees could be saving *more* if he were obtaining Savings Bonds regularly, right where he works. Even with today's high prices, it has been proved that between 40% and 60% of America's working millions—at any wage level—can and will buy Bonds through Payroll Savings *if management sponsors the Plan and if a fellow worker asks them to sign up.*

Yes—your employees want to help you build security—for all of us. It's up to you whether they get the chance. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bonds Division. While it's on your mind, why not call him? Or write the Treasury Department, Washington 25, D. C.

The Treasury Department acknowledges with appreciation the publication of this message by

Rock Products

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.





THE 1/3 YARD SCHIELD BANTAM

TRUCK MOUNTED POWER SHOVEL • TRENCH HOE
DRAGLINE • CLAM • PILE DRIVER • CRANE

drive up and dig in...

The BANTAM mounts on any 1½ ton truck. It's a fast hard worker on the job and saves time between jobs. Changing from shovel to trench hoe, dragline, clam, piledriver or crane is a matter of minutes.

Its full circle design and fast cycle operation results in capacities of 60 yards per hour as shovel or dragline. When used as a trench hoe it digs 100 feet of five foot ditch per hour.

All major assemblies roll on ball bearings, mechanical clutches are external expanding type, split type laggings provide proper line speeds. Hook roller design eliminates strain on center pin.

For mobility, versatility, easy operation, and capacity for getting jobs done profitably GET A BANTAM. Write for details.



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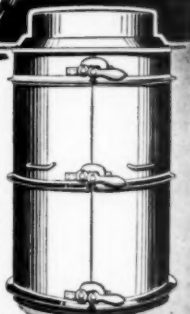
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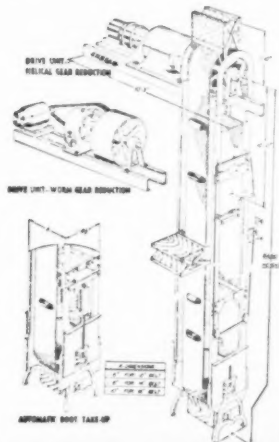
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42"	5	1/8"	1/16"		20"	5	1/8"	1/32"	
36"	6	1/8"	1/16"		20"	4	1/8"	1/32"	
30"	6	1/8"	1/16"		18"	4	1/8"	1/32"	
30"	5	1/8"	1/16"		16"	4	1/8"	1/32"	
26"	5	1/8"	1/32"		14"	4	1/16"	1/32"	
24"	5	1/8"	1/32"		12"	4	1/16"	1/32"	

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204'x60', 206'x60', 208'x60', 210'x60', 212'x60', 214'x60', 216'x60', 218'x60', 220'x60', 222'x60', 224'x60', 226'x60', 228'x60', 230'x60', 232'x60', 234'x60', 236'x60', 238'x60', 240'x60', 242'x60', 244'x60', 246'x60', 248'x60', 250'x60', 252'x60', 254'x60', 256'x60', 258'x60', 260'x60', 262'x60', 264'x60', 266'x60', 268'x60', 270'x60', 272'x60', 274'x60', 276'x60', 278'x60', 280'x60', 282'x60', 284'x60', 286'x60', 288'x60', 290'x60', 292'x60', 294'x60', 296'x60', 298'x60', 300'x60', 302'x60', 304'x60', 306'x60', 308'x60', 310'x60', 312'x60', 314'x60', 316'x60', 318'x60', 320'x60', 322'x60', 324'x60', 326'x60', 328'x60', 330'x60', 332'x60', 334'x60', 336'x60', 338'x60', 340'x60', 342'x60', 344'x60', 346'x60', 348'x60', 350'x60', 352'x60', 354'x60', 356'x60', 358'x60', 360'x60', 362'x60', 364'x60', 366'x60', 368'x60', 370'x60', 372'x60', 374'x60', 376'x60', 378'x60', 380'x60', 382'x60', 384'x60', 386'x60', 388'x60', 390'x60', 392'x60', 394'x60', 396'x60', 398'x60', 400'x60', 402'x60', 404'x60', 406'x60', 408'x60', 410'x60', 412'x60', 414'x60', 416'x60', 418'x60', 420'x60', 422'x60', 424'x60', 426'x60', 428'x60', 430'x60', 432'x60', 434'x60', 436'x60', 438'x60', 440'x60', 442'x60', 444'x60', 446'x60', 448'x60', 450'x60', 452'x60', 454'x60', 456'x60', 458'x60', 460'x60', 462'x60', 464'x60', 466'x60', 468'x60', 470'x60', 472'x60', 474'x60', 476'x60', 478'x60', 480'x60', 482'x60', 484'x60', 486'x60', 488'x60', 490'x60', 492'x60', 494'x60', 496'x60', 498'x60', 500'x60', 502'x60', 504'x60', 506'x60', 508'x60', 510'x60', 512'x60', 514'x60', 516'x60', 518'x60', 520'x60', 522'x60', 524'x60', 526'x60', 528'x60', 530'x60', 532'x60', 534'x60', 536'x60', 538'x60', 540'x60', 542'x60', 544'x60', 546'x60', 548'x60', 550'x60', 552'x60', 554'x60', 556'x60', 558'x60', 560'x60', 562'x60', 564'x60', 566'x60', 568'x60', 570'x60', 572'x60', 574'x60', 576'x60', 578'x60', 580'x60', 582'x60', 584'x60', 586'x60', 588'x60', 590'x60', 592'x60', 594'x60', 596'x60', 598'x60', 600'x60', 602'x60', 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1548'x60', 1550'x60', 1552'x60', 1554'x60', 1556'x60', 1558'x60', 1560'x60', 1562'x6

SCALES—CRUSHERS VIBRATING SCREENS CONVEYORS—FEEDERS CONVEYOR IDLERS

15 Ton Truck Scales \$ 450.00
20 Ton Truck Scales 510.00
26 Ton Truck Scales 665.00
Other scales to 50 ton capacity. All scales complete with structural steel weighbridge. Replacement parts for most all makes of scales.

STONE—COAL—CINDER CRUSHERS

10 to 20 tons per hour capacity \$ 395.00
25 to 30 tons per hour capacity 945.00

FEEDERS

15 to 35 ton capacity
(per hr. of 50 lb./cu. ft. mat.) \$150.00
28 to 60 ton capacity
(per hr. of 50 lb./cu. ft. mat.) 190.00
50 to 100 ton capacity
(per hr. of 50 lb./cu. ft. mat.) 575.00
100 to 175 ton capacity
(per hr. of 50 lb./cu. ft. mat.) 800.00

VIBRATING SCREENS

We have approximately 100 machines on the floor, ranging in screening area sizes from 2'x2' to 5'x14' with 1 to 5 decks. Eccentric weight or positive throw eccentric shaft types.
Prices range from \$ 395.00

CONVEYORS—PICKING TABLES

Troughing—idler conveyors—picking tables—Lengths from 10' to 500', widths to 60".
Prices range from \$ 395.00

TROUGHING & PICKING TABLE IDLERS

All steel construction, no cast-iron, interchangeable with other well-known makes of idlers. Precision ball bearings with aluminite fittings. Bearings are replaceable. Shafts run clear through, and no bearing adjustments are required. Easy to start and will run in cold weather. No grease seals, but aluminite fittings. Ball races are rust proof; maintenance is negligible. If you want to build your own conveyors we have all parts including standard sections, head and tail pulleys, takeups, drives, idlers, speed reducers, sheaves, belting, etc.

5-roll Idlers:

Width
16" belt \$19.00 14" belt \$18.50
24" belt 21.00 18" belt 20.00
36" belt 23.00 30" belt 22.00
42" belt 24.00

1-roll Idlers:

30" belt 9.00 24" belt 8.25
42" belt 10.50 36" belt 9.75
48" belt 11.25

More than 2000 mines and quarries have Bonded equipment. Send for catalog and prices of new and rebuilt machines. Guaranteed equipment—immediate shipment from large stocks at reduced prices.

BONDED SCALE & MACHINE CO.

128 Bellview Ave. Columbus 7, Ohio
Ph. Garfield 2186; Univ. 2832, Eves.

MACHINERY

Immediately Available

3—5'x12' Two Surface Tyrock F-600 Screens. Complete with Motors.

1—No. 848 Type R Allis Chalmers Crusher. Complete with Motor.

**This Equipment New
Has Never Been Operated**

**Blue Diamond Corporation
Los Angeles**

DELIVERY FROM STOCK

AIR RECEIVER—Vert. 5'x14" ASME, 263 lbs. WP.

CABLE—Welding 6000 ft. 1/0 NEW.

Caracard, 28000 ft., No. 14, 3"C. NEW.

CAPULLERS—2—Link Belt, 5 H.P.

CONVEYOR—Link Belt, 24"x30", flat.

CRUSHERS & PULVERIZERS—Jeffrey 36"x24".

Single Roll, 10"x20".

Single Roll, 18"x24".

Jeffrey Swing Hammer Mill 30"x24".

2-roll spiked Bartlett & Snow 14"x16".

Micro pulverizer No. 2.

Stedman Mill, 4-cage, 36".

Raymond Mill, 3-roll low side, complete.

DIESEL GENERATORS—60 KW G.M., 6-71RC,

3, 60 127-220, complete. (3)

100 KW Superior, GDB-8, 120 240 DC, complete (3).

ELEVATORS—BUCKET—Webster, 48", MI Buckets

14"x2".

Jeffrey, 68", MI Buckets 10"x6".

FANS & BLOWERS—1,000 to 33,000 CFM.

Axial Fans—NEW, complete motor and starter,

from 3000 to 10,000 CFM.

FEEDERS—VIBRATING—Syntron type F-33.

Jeffrey, size 18"x36".

Allis-Chalmers, size 36"x12"x6".

FULLER-KINTON PUMP—Type H comp. with

motorized valves and 250' 4" pipe.

PUMPS—Centrifugal, 20 gals. to 2500 gals.

Vacuum, Stokes, Model 212C, 100 CFM (4).

SPEED REDUCERS—Ratio 4:1—263:1, 3—10 HP.

Var-Speed Ratio 2:1—6:1, 3—7 1/2 HP.

SEWING MACHINE—Bogopak, type E-1, comp.

STACKS—3'x11' welded (3).

TANKS—Steel, 350 gals. to 41,000 gals.

WELDERS—300 and 400 amps. Hobart and G.E.

Heat and Power Co., inc.
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BARGAIN EQUIPMENT LIST

USED—MODEL LS-S5 LINK-BELT SPEEDER, gasoline powered, 3/4 yard CRANE with 45' boom, (Year 1941). COMPLETELY REBUILT, NEW MACHINE GUARANTEE.

USED—MODEL LS-S5 LINK-BELT SPEEDER, diesel powered CRANE, 3/4 yard with 45' boom, (year 1941). GMC Diesel, 200 hours on this machine since being overhauled.

USED—MODEL 104 NORTHWEST gasoline powered CRANE with 50' boom (Year 1929).

NEW AND USED AIR COMPRESSORS. All sizes—rent or purchase.

L. Z. HOWELL CO., INC.

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Consult Albert!

Tubular Piling, Points, Sleeves and

Cobi Pipe Piles

Power Piping Fabrication

Supplies of Fittings, Valves and

Tube Turns

Pipe—Small and Large Diameters, Iron and Steel, Welded, Seamless, Corrugated

Albert Pipe Supply Co., Inc.

Berry & N. 13th St., Brooklyn, N.Y.
Phone: Evergreen 7-8100

1—38"x24" Allis Chalmers Superior Jaw Crusher.
1—5 1/2' Standard Symons Cone Crusher.
2—5 1/2' Short Head Symons Cone Crushers.
8—4x5 Tyler Hammer Vibrating Screens.
6—cage Colnared Iron Works Ball Mills; Grate discharge.
2—35" Duplex Submerged Spiral Akina classifiers.
1—9x15 Webb City Iron Works Jaw Crusher.

THE GOLDEN CYCLE CORPORATION
Mill Department Colorado Springs, Colo.

FOR SALE

Hales bucket loader on Cais. Good, now working or trade for 1/2 yd. crane. Converter 36"-11 ft. rotary sand and gravel screen. NEW.

**IRVING C. LATHAM
Orient, N. Y.**

FOR SALE

1—36x30 Dixie Hammernill 1 1/2 yrs. old.
1—30"x8" Pioneer Apron feeder used 6 wks.

1—Worthington Wagon Drill.

1—3/4 yd. Yaun dragline bucket.

1—3/4" Lima model 34 paymaster shovel

and dragline.

1—Model 75W Hales loader 1 1/2 yrs. old.

1—315 C.P.T. compressor.

1—D.R. 30 Cleveland Wagon Drill.

2—sets grate bars for No. 22 Gilson mill.

1—set hammers for No. 22 Gilson mill.

2—solid tire axles.

Can be seen at Troy Grove, Ill. or phone

Martelles, Ill. Green 296.

HARRINGTON STONE CO.
Troy Grove, Ill.

FOR SALE

1 1/2 cu. yd. Sauneman Slackline cableway 90 ft. Steel Mast complete with blocks, guys and track cable. Good condition, purchased new and used less than 2 years.

Can be seen at our plant at Michigan City, Indiana.

PORTAGE-MANLEY SAND CO.

Portage, Wis.

FOR SALE

Each Unit Overhauled
K 55 Link Belt Electric Shovel
2 yd. Shovel and Dragline Front
37 Marion 1 1/2 yd. Steam Shovel
5' Dia x 8' Air Swept Tube Mill
Complete with Motors, Fans and Pipe
EASTERN ROCK PRODUCTS, INC.
404 Court St. Utica, New York

FOR SALE

DERRICKS, HOISTS, COMPRESSORS
Drills, Steels, Bits
BINS, ELEVATORS, CONVEYORS, ETC.

DRAVO-DOYLE COMPANY

2601 Preble Ave. Pittsburgh 12, Pa.

DIESELS—FOR SALE

300 KW AC Fairbanks-Morse 300 RPM
300 KW AC Buckeye, 400 RPM
200 KW AC Buckeye, 400 RPM
175 KW AC Buckeye, 400 RPM
100 KW AC Buckeye, 400 RPM
Several Model 6-71 GM Diesel Power Units. Write for latest listing.
ROBERT L. NEISWANDER
Cable Address: ONIDIESEL
S. Peoria Lima, Ohio

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Belt Conveyors and Feeders

500'-30" belt conveyors, roller bearing idlers
400'-36" belt conveyors, roller bearing idlers
18" and 30" flat conveyors, roller bearings
42" belt conveyor
24" belt conveyor, plain bearings
18" belt conveyor with anti friction idlers
10" belt conveyor with plain bearings
Pulleys, belt idlers and belt
Portable belt conveyor, 18"x24", 5 hp motor
Portable belt conveyor, 10"x10" with 3 HP motor
New Standard Wood Apron Conveyor, 48"x105"
Steel Apron Feeders, 18", 24" and 30" wide
18" belt conveyor with trippers
Single Strand Flight conveyor, 15"x150"
Jeffrey No. 3 and No. 4 vibrating feeders
Enlosed screw conveyor, 12"x25 ft.

Crushers

Farrell jaw crusher, 18"x10", Blake A
Climax 10"x20" jaw crusher
No. 10-10 Grundler Aristocrat Peerless Grinder
Heavy duty roll crusher, 18"x20", corrugated
American Pulverizer, type ST-T
40"x12" heavy duty roll grizzly
AC 3D gravity reduction crusher, Short head

Vibrating Screens

Sevo vibrating screen, 4'x10', two deck
Tyler electric type 400, single deck, 4'x5'
Sevo vibrating screen, 2'x5', two deck
Selectro vibrating screen, 3'x3', two deck
Flat-0 single deck 3'x5' vibrating screen
Hammer screen single and double deck 2'x5'
New Universal vibrating screen
New drive for 4' Link Belt P-D screen

Miscellaneous

20' overhead Marit 2 motor 10 ton electric crane
Lakewood material bucket 1 1/2 yard cap
Electric Hoisting engines, 2 and 3 drums with
swivels
Steel stiff Leg Derrick, bucket operating
salvage winch from drum air hoist, cap. 2000 lbs.
McKinnon-Terry Sheeting Hammer No. 5
Link Belt, Dolge, Reeves Variable Drives
Gearmotors, plan motors and engines
Selected lot of gear reducers, to 75 HP.
Electric Transformer welder, 200 amps.
Silent Hauler and Crane Co. car pulley
40' slings of 3/4" galv. wire rope. New

Bucket Elevators

Inclined belt elevator, 10"x60" spaced buckets
Enlosed spaced bucket elevators, 10"x12"
Inclined or vertical elevators, 14" buckets
Enlosed 16" bucket elevator, spaced or cont.
Inclined or vert. 12"x24" bucket elevator
Elevator belt, buckets, chain, sprockets, pulleys
Chains: C131, C111, C110, C102R, 835, 825, 822,
New No. 832 steel thimble chain with attachments
Chains: H-78, 83, 114, 522, 527, 730, 1030, etc.
Will furnish spaced or cont. bucket elevators

G. A. UNVERZAGT & SONS
136 Colt St. Irvington, N. J.

FOR SALE

20 tons Belgian flint pebbles
1-American pulverizer with 125
H.P. direct connected motor
1-70 H.P. Marine type diesel en-
gine, same as new
All steel dredge boats, tug boats and
pug boat
Electric motors AC from 1 H.P. to
300 H.P.
Link Belt pan conveyors 36"x22"
centers
Jeffrey hammer mill 42"x36"
Richardson automatic scales
4" and 5" cement circulation pipe
Steel bins, hoppers and tanks
Fuller-Kinoy pump (6")
6"x50" Manitowoc dryer
1-10"x150" Kiln
4 Wood hoppers lined with steel
Elevators with casing and double
chain
B & W coal pulverizer
Steel buildings: 20"x100', 75"x350'
and 50"x350'.
One industrial property in desirable
location, water power, railroad and
highways and excellent labor con-
ditions. Also lake frontage on many
desirable lakes.

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COMPRESSOR

Ingersoll-Rand, K210 - 4 pneumatic
tires - Rebuilt.

LeROI EQUIPMENT CORP.

45 High St. Cranford, N. J.
Phone: CRanford 6-3083

DRAGLINE: 4 yd. capacity, 110' boom, 2200 volt,
A.C.

SHOVEL: Bucyrus Erie 54-B, 2 1/2 yd., D17600
caterpillar motor.

DRILLS: Bucyrus Erie 29-T, gas, 9" bits, NEW,
2-Electric, used.

MOTOR: G.E. 40 H.P., 3 phase, 60 cycle, 220-440
volt, 1765 RPM, with V-belt pulleys and belts,
starter, etc.

GOODRICH SUPER LONG LIFE CORD CON-
VEYOR BELT (NEW): Large quantity of Good-
rich Belt 42" wide, 6 ply, 42 oz. duck, 7/32"
top cover, 1/16" bottom cover, on original reels,
all NEW, NATURAL RUBBER, with or without
mechanical parts.

CRUSHING PLANT: Portable, diesel powered.

GYRATORY CRUSHERS: 1-30" and 42", com-
plete with motor and drive, 1-Ailis Chalmers
8-K and 6-K, 1-Austin No. 8, 20" opening
with feeder, 1-Telsmith 16-B, all steel, 15"
coning.

JAW CRUSHERS: All sizes 485 to 4850".

REDUCTION CRUSHER: Traylor type T.Z. size
36", Kennedy model 37 with motor integral; Tel-
smith 32-B complete with V-belt pulley; Ailis
Chalmers type K322 fine reduction; Traylor type
T.Y. 18".

ROLL CRUSHERS: Jeffrey 18x24 double roll for
coal, coke, clinkers, etc. Ailis Chalmers 34"x20",
NEW condition.

HARDING MILLS: Conical Ball Mills 6"x22",
8"x20" and 8"x20" manganese steel lined. Her-
ringbone gears, with motors and V-belt drive.

KILNS, COOLERS, DRYERS: 1-Single shell 24"
x20", complete with drive, burner, no motor, 1-
2'x20' brick lined kiln, 1-10'x60' heavy duty
type Dryer complete with dust collector and all
auxiliary equipment.

DERRIK HOIST: National 3 drum, 80 H.P.,
shop No. 4636, with 15 H.P. separate electric
swinger, 3 phase, 60 cycle, 220/440 volt.

MINE HOISTS: 1-All steel single drum 8' dia.,
1 1/2" rope, 41,000 lbs. single line pull, 400
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Telamith 18x32.
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Telamith 5H, 10-B, 15-B, 16-B.
Kennedy Van Saun 7, 19, 25 1/2, 38.

Traylor 751-A.
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Plymouth 30 ton std. ga.

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1946 "Cletac" DHD overhead shovel

3 1/2 yd. bucket and blade complete \$8000.00. For quick sale. Going out of gravel business.

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.....Transmission
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Special bases and variations of drive arrangement may be had to meet special requirements. Your inquiries on pumping problems will have the prompt attention of H & B engineers, who have had many years of specialized experience solving such problems. Write for Bulletin DP-147.

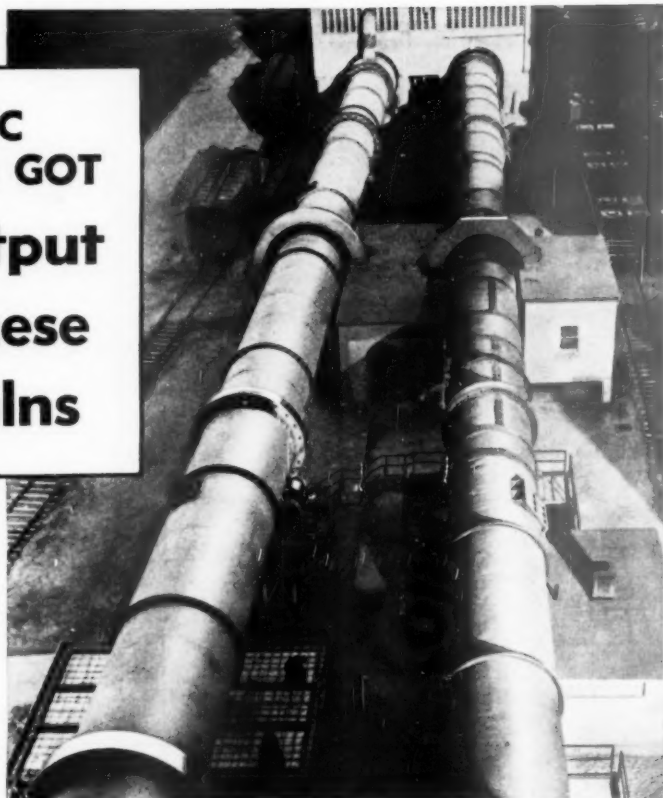
HETHERINGTON & BERNER INC.
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Illustration shows an H & B pump installation in a typical small pit operation.



HOW BASIC REFRACTORIES GOT Bigger Output — With These *Longer* Kilns



MAGNEFER, used in open hearth and electric furnaces as "fettling" refractory, is produced by Basic Refractories, Maple Grove, Ohio. Magnefer is made by dead-burning dolomite and iron ore flux to a temperature of approximately 3,000° F. in rotary kilns.

Like thousands of other companies, Basic Refractories was faced with the problem of stepping up production to meet a huge demand for their product.

A low-cost solution was found by making use of two existing short kilns at a great saving in first cost. These kilns were joined together and added to (with a special section), making a 328 ft unit. The second kiln was then engineered and built by Allis-Chalmers to match the first.

Considerations of length, arrangement and the many other complex factors involved in a rotary kiln installa-

tion were worked out to obtain maximum economy as well as the desired capacity.

Result? Substantially increased production and a lower cost per ton than was possible with the shorter kilns.

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Whatever your burning process, it will pay you to consult Allis-Chalmers.

▶ A-C experience covers over 50 years of rotary kiln engineering.

▶ Hundreds of successful kilns installed.

▶ Allis-Chalmers shop and manufacturing facilities are unsurpassed.

The Allis-Chalmers representative in your area is as close as your phone. Call him today, or write for Rotary Kiln Bulletin 07B6368. Offices or distributors in principal cities in the U.S.A. and throughout the world.



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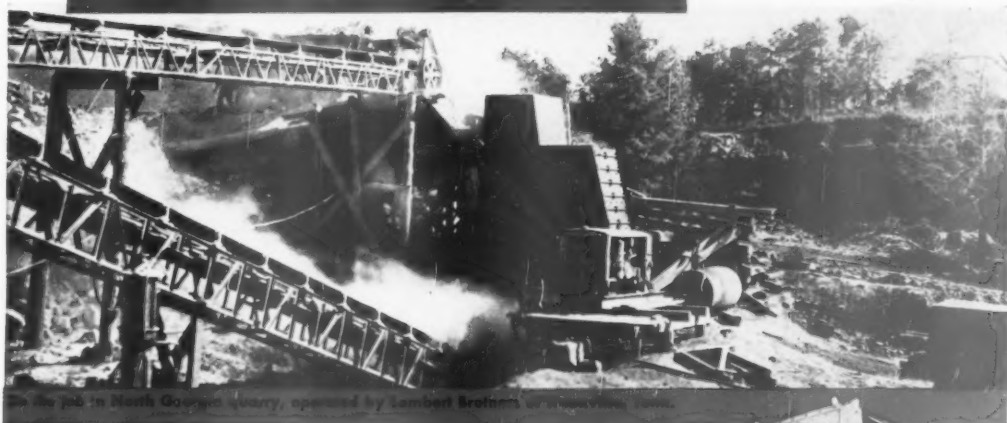
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ALLIS-CHALMERS

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Dual Impact Action does it again



On the job in North Georgia quarry, operated by Lambert Brothers of Knoxville, Tenn.



Here this New Holland Model 5050 Breaker crushes even-quarry rock up to 50" . . .



It also produces clean, cubical aggregate passing 4" in one operation . . .



New Holland Model 5050 Double Impeller Breaker reduces 50" material to commercial sizes in single pass . . .

• Like all New Holland Breakers, the new Model 5050, recently installed by Lambert Brothers, is a field development . . . designed to work in all types of rock, under all conditions . . . built to produce maximum aggregate at minimum cost. Simple, sturdy construction keeps costs down—production up.

Here are some quick facts—more on request:
Produces up to 400 tons per hour on 300

h.p. Heavy duty steel outer plates. Interior lined with manganese steel wear plates. Spherical roller bearings. All parts accessible; all adjustments easily made by average workman. Mounted on heavy I-beams to simplify installation. Weight 54 tons.

New Holland Double Impeller Breakers are used, recommended by operators everywhere. Get the facts. Write for complete information including location of installation nearest you. Address: Department R-39.

Read

what W. E. Lambert, of Lambert Brothers, Knoxville, Tenn., says about New Holland Model 5050 Double Impeller Breaker shown above.

"The ability of this breaker to reduce 50" material to commercial sizes in one pass is remarkable . . ."



NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of the Sperry Corp.

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